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DIESEL RAILWAY TRACTION SUPPLEMENT

The April issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE in that the size of the page has been reduced from 9 in. x 12 in. to 8½ in. x 11½ in. The type area of the page remains the same, namely, 7 in. x 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war

TO CALLERS AND TELEPHONERS

Until further notice our office hours are :
 Mondays to Fridays 9.30 a.m. till 5 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Mr. Churchill and Post-War Railways

In his recent broadcast speech on post-war policy the Prime Minister made only one direct reference to railways. This occurred when, in dealing with the question of post-war trade and industry he remarked that "we were the earliest in the world with railways; we must bring them up to date in every respect." Few will cavil at this statement although its general terms give no hint of the wide implications of finance, or the necessity for the establishment of some form of correlation of rail and road services which require to be settled before any large scale modernisation schemes could be seriously considered. Mr. Churchill also expressed the view that "there is a broadening field for State ownership and enterprise, especially in relation to monopolies of all kinds." No light was thrown on what monopolies the Prime Minister had in mind but, as a matter of interest, some remarks made by the Royal Commission on Transport in December, 1930, as to railways are very apposite. Dealing with the question of the statutory regulation of railways the commission remarked : "No doubt much of it (statutory regulation) was desirable and indeed necessary in the public interest in the case of an undertaking which enjoyed a virtual monopoly, but times have changed; much of the element of monopoly has now disappeared and we are tempted to wonder whether in present circumstances regulation is not overdone in certain directions. Certainly it proved a hardship to railways when they found themselves faced with road competition." The Prime Minister's comprehensive speech was notable in that it placed post-war planning in its proper perspective in relation to the urgent necessity for every effort being made to secure the successful prosecution of the war. Although preliminary study of post-war possibilities is undoubtedly desirable, it is clear that some considerable time must elapse before any such plans could become operative.

"Initiative" in After-War Transport Planning

We find that one of the headlines on our cover last week surprised and alarmed some of our readers! The headline in question ended with a note of interrogation and asked "Are British Railways Losing Initiative?" It directed attention to a letter by Mr. Ashley Brown in which the word initiative was used in the military or political sense. Our correspondent wrote : "In every contest—from chess to war—the initiative is a factor of tremendous potency." He was perturbed that in his opinion both the railways and the road transport companies are leaving the initiative in after the war planning too much to the Government instead of being ready with an agreed scheme of their own. There was, of course, no suggestion that the railways themselves were becoming less progressive.

A Problem for the Institute of Transport

Sir Samuel Courtauld raised an interesting point in a letter to *The Times*, which was published on March 24, and which dealt with social service charges. He put forward the view that it was time that the limelight of public discussion was switched from production to distribution. He suggested that to say that it was only by reducing costs of production that the nation would be able to pay for greater social services was to help to perpetuate a popular illusion and to conceal a very grave weakness in our economic structure. Sir Samuel Courtauld pointed out that almost all public discussion about greater efficiency was focused on costs of production. Distribution was seldom mentioned, but he believed it to be true that the ultimate consumer paid on the average about twice as much for the article or commodity which he bought as the manufacturer received for it; about half the final price paid went to the distributors. The manufacturer's own cost was already swollen with his own expenses of salesmanship, which were added to his costs of production proper. Manufacturers had for years devoted the utmost skill and energy to reducing costs of production, and had been conspicuously successful in doing so, but costs of distribution had been rising all the time.

Government Control in Industry

A good deal of disquiet has been aroused by recent action of the Government in intervening in the affairs of industrial concerns. In several cases controllers have been appointed for aircraft production companies, and steps have been taken also to acquire a part of the undertaking of the Barrow Haematite Steel Co. Ltd. For the latter step it may at least be said that it appears to have been taken with the consent of the directors. As to the appointment of controllers, one of the most disturbing aspects of the situation has been the absence of any indication of the background to intervention in the industry. An effort was made in the House of Lords, on March 25, to elicit some state-

ment of policy from the Government on this matter, but without success, and fears have been expressed that one important effect of the increase of Government control in industry must be a material lessening of the influence of men of long association with particular businesses concerned, with the resultant loss of much experience, ability, and initiative. A further disquieting aspect of certain of the cases, notably that of Short Bros. Limited, of which the Government has taken over the share capital, is that no indication has been forthcoming as to whether, at the end of the war, the full rights of ownership will be restored to the former proprietors. In view of some of the points that were raised in the House of Lords debate, there would seem to be need for a statement of policy by the Government, which might serve to allay some of the grave uneasiness which has been aroused.

Overseas Railway Traffics

Argentine railway traffics for the 37th week of the financial year were affected to some extent by the Carnival, but in the 38th week there was a general increase except on the Buenos Ayres Western. There was a recovery in the prices of some debenture issues, but the general tone of the market was not very favourable. The increase of £24,000 for the 38th week on the Buenos Ayres & Pacific was exceptionally good. For the 37th and 38th weeks together the Central Argentine shows an advance of £65,265 in gross receipts, and the corresponding increase on the Buenos Ayres Great Southern is £31,680. The Central Uruguay has secured in the first 38 weeks of the financial year a gross traffic figure of £1,031,470, an increase of £110,775, and the United of Havana continues its progress, so as to bring its aggregate for the same period to £1,833,444, an improvement of £856,773. Antofagasta traffics for the 11 weeks to March 21 amount to £321,840, an increase of £97,580.

	No. of weekly traffics	Inc. or decrease	Aggregate traffic	Inc. or decrease
		£	£	£
Buenos Ayres & Pacific*	38th	120,300	+ 24,000	3,709,740 + 466,920
Buenos Ayres Great Southern*	38th	180,900	+ 28,680	6,103,860 + 585,840
Buenos Ayres Western*	38th	55,020	- 2,940	2,042,040 + 104,880
Central Argentine*	38th	137,400	+ 37,785	5,025,405 + 1,015,386
Canadian Pacific ...	... 11th	1,030,400	+ 114,600	10,971,000 + 938,200

* Pesos converted at 16½ to £.

Among Brazilian railways, the Great Western has earned up to March 20 of this year gross receipts of £196,500, which are £61,800 higher than for the corresponding period of 1942, and the Leopoldina traffics for the same period are £364,227, marking an advance of £22,016.

British Investments in Mexico

The situation as to the return on British investments in undertakings in Mexico has been extremely bad for a good many years, and last year was no exception. According to statistics, published by *The South American Journal*, of the total nominal capital of £92,168,242 invested in Mexico, and quoted on the London Stock Exchange, as much as 90·3 per cent. received no interest, and the average rate of interest on the whole was no more than 0·7 per cent. For the twenty-ninth year in succession the Mexican Government has made no payment on the many millions it has borrowed from British investors, of which £20,200,260 is quoted in London. The insignificant average return arises from the earnings of public utility undertakings, and mining companies, which have derived benefit from the United States war demands. More than half the total of British investments in Mexico relate to the railways; the amount outstanding is £45,595,968, and it is nine years since any payment at all was made on any capital issue of this kind. Even then, only £7,500, or 0·01 per cent. was payable on the £86,822,236 which was quoted at that time. A large part of the capital now quoted does not represent the actual sums found for building railways in Mexico, but is the result of schemes of re-arrangement for the settlement of outstanding defaults.

Problems Facing the Export Trade

Mr. Leslie Gamage, Vice-Chairman & Joint Managing Director of the General Electric Co. Ltd., has spent most of his business life in furthering export trade, and thus brought a strictly practical outlook to bear on the problems to be faced by those seeking overseas markets for their goods, when he made his first speech as President of the Institute of Export last week. Pointing to the nation's dependence on a flourishing export trade in the years after the war, Mr. Gamage said that anything that could be done now to plan for the future of the export industries would rank in importance with the war work which had to be done today. He showed that the ultimate result of lease-

lend arrangements was difficult to predict so far as the export trade was concerned; under the present plan it would be necessary to make payment not only for the use of the goods supplied, but also for those which were not returned. After the war he had no doubt that exports would be a first priority. He was not pessimistic as to achieving a greater export trade, and pointed to Canada, India, the Colonies, and China as territories which contained large areas awaiting development. He thought it would be necessary to have some kind of international regulation to ensure that export trade of the world was maintained in a manner that would be equitable and stable. He looked forward to the time when the Department of Overseas Trade would be given enhanced prestige and when it would be staffed by experts who would not be moved as soon as they showed signs of real merit.

Operating Staff Casualties in the U.S.A.

Much publicity is given in the United States to the relative freedom enjoyed by railways from personal injuries to their staffs. A species of competition takes place as to which railways can show the lowest number of "reportable" casualties to every million man-hr. worked by the whole of their operating staffs—accidents requiring so to be reported are those which cause a man to be off duty for more than three days—and some remarkable immunity figures have been published. An inquiry recently undertaken by the Interstate Commerce Commission—the body to which the reports must be rendered—shows that all is not well with the figures. Accident files were investigated on six major railways, which had returned 1940 casualty rates averaging 2·15 to 12·27 injuries to every million man-hr. The 2·15 minimum was that reported by the Union Pacific Railroad, which received warm commendation for the energy with which a policy of accident prevention had been pursued throughout the service. To the company with the 12·27 rate it was at least possible to pay a tribute for the meticulous accuracy of its reporting, although the rate was higher than the average. With certain other railways there had been a considerable variation in method, and cases were brought to light of men allowed to return to work within the 72-hr. period when they were in no fit condition to do so, and of others transferred to lighter work, after suffering casualties, to avoid reporting. The figures of certain influential companies were discredited, and they were subjected by the I.C.C. to sharp criticism in that these lines appeared more concerned to find reasons for the non-reporting of casualties than to think out ways and means whereby such accidents might be prevented.

Speed Restrictions

In the course of investigations into a collision which occurred in September last on the main line of one of the leading American railways, careful investigations were made into the normal speed of trains over the section concerned, which is subject to a number of speed restrictions. Examination of locomotive speed-recorder tapes showed that through a certain junction, with a 30 m.p.h. speed limit, 35 per cent. of the trains had travelled at speeds ranging from 32 to 50 m.p.h.; that over a stretch of line subject to an overruling restriction of 70 m.p.h. 55 per cent. of the trains had travelled at between 74 and 82 m.p.h.; and that over the approach to an important terminal, restricted to 15 m.p.h., every one of 100 speed-recording tapes showed speeds ranging from 25 to 28 m.p.h. The well-known streamline train involved in the collision, which in foggy conditions had passed a "stop and proceed" signal at 45 m.p.h., was found on nine out of the preceding ten days to have received an "approach" caution indication requiring reduction of speed to 30 m.p.h. up to the next signal, but on no occasion had reduced below 36 m.p.h., and on one run had continued at 60 m.p.h. Such a tardy examination of tapes as this, however, has the appearance of locking the stable door after the horse has been stolen. The business of the civil engineer is to lay down speed restrictions that are not unnecessarily severe in relation to curvature and other local conditions, and the business of the operating authorities is, first, to frame train schedules so that the restrictions can be obeyed, and then to see that they are obeyed. Where locomotives are generally fitted with self-recording speed indicators, there seems little excuse for the laxity of supervision referred to above.

Bridges in Wartime

In Great Britain the problem of operation over main and subsidiary lines which do not permit the use of the heaviest standard locomotives, on account of weak under-bridge work,

has been met largely by the design of general purpose locomotives, which by reason of restricted clearances and weights have the maximum possible radius of action. Of these types the L.M.S.R. Class "5F5F" 6 ft. 4-6-0, of which nearly 500 are now at work, is a notable example. In the United States, however, the tendency has been almost entirely in the direction of the largest possible locomotives, to permit a reduction of operating costs by increasing trainloads to a maximum, and of extensive bridge-strengthening programmes in order to increase the radius of action of such locomotives. Now, however, with the shortage of materials, American railways are in a dilemma; many of the proposed bridge improvements cannot be carried out, and the result is that the larger locomotives are barred from important routes or may operate over them only at uneconomically low speeds; moreover, with traffic volume at record levels, the wear and tear of all underline bridgework on main lines is rapidly increasing. One railway devised a concrete type of bridge structure, reinforced with old rails, for certain replacement purposes, but was denied the use of the rails on the ground that they were more urgently needed elsewhere; alternative plans for timber bridges were ruled out by the impossibility of obtaining suitable timber. Spans from abandoned lines are being re-used, shortened if necessary; mass concrete arch culverts are being used for waterway bridges; and where possible viaducts and bridges are being replaced by embankments; but in general the U.S.A. bridge problem remains acute.

What Next?

Locomotive builders seem to be able to turn their hand to almost any kind of engineering. Proof of this is afforded by the extent to which their resources and skill are being used in this war to turn out military and other equipment. In this country we have seen a variety of unusual machines being made in locomotive shops at different times and recently our associated contemporary *Shipbuilding & Shipping Record* reported that the same sort of development had been happening on the other side of the Atlantic. An illustration was given showing a shop of the American Locomotive Company engaged in the construction of Scotch-type marine boilers for sea-going steamships. In all, 90 of these boilers were said to have been built, and a production rate of 25 a month had been maintained. The Scotch type of boiler differs considerably from the locomotive type of boiler; it is much larger in diameter and relatively short. Combustion takes place in flue tubes of which in this instance there were three of the corrugated variety with a diameter in the neighbourhood of 3 ft. These flues lead into firebox-like structures in the back end of the boiler from which the gases pass to the front end through many small fire tubes. The successful completion of marine type boilers in a locomotive shop reflects great credit on those responsible for planning and carrying out work so different from that normally undertaken.

Cab-in-Front Locomotives

At various stages in steam locomotive history attempts have been made to move the cab from its conventional position between engine and tender to a position which would give the driver a better look-out ahead. The need is all the greater in these days of longer and larger-diameter boilers, which restrict the enginemen's range of vision, and place them at a disadvantage in comparison with the crews of electric and diesel-electric locomotives, who have an unobstructed view from the front end. The trouble is, of course, that of coal supply. When the Philadelphia & Reading of the U.S.A. first began to use low-grade anthracite fuel, and introduced for the purpose the long and wide Wootten firebox, the driver's cab was perched on top of the boiler ahead of the firebox, but this method had the disadvantage of separating the driver from the fireman, who was provided with his own shelter in the usual position between the firebox and the tender. Next the Adriatic Railway of Italy built some 4-6-0 locomotives in which the boiler was reversed on the frames, with the cab in front, and the chimney next the tender; the latter was merely a water tank; the coal was stored in bunkers arranged as tanks on both sides of the boiler, and no more than a limited supply, therefore, could be carried. Today the only railway in the world which has evolved a successful design of cab-in-front locomotive is the Southern Pacific, which has built a considerable number of powerful 4-8-8-2 articulated engines of this type, also reversed, with cab leading, chimney in rear, and 12-wheel tender after that. The coal difficulty is solved by firing with oil, which is piped from the tender to the front end of the engine; where coal-firing is necessary, as on the Rio Grande Division between El Paso and Tucumcari, the same wheel arrangement is used, but with the conventional arrangement of chimney leading, and cab between locomotive and tender.

Sir Edward Beatty

THE death of Sir Edward Beatty, which was recorded briefly in our last week's issue, will be a great loss to the Dominion to which he had rendered exceptional service, not only in transport but in other national spheres. Sir Edward Beatty was taken ill in March, 1941, and this culminated in his resignation, in May of the next year, of the Presidency of the Canadian Pacific Railway, which he had held since 1918. He had been appointed also Chairman of the company in 1924, and he retained that position until his death. He was associated with some 34 transport concerns, and with a number of important commercial enterprises in the Dominion; he took a great interest in education, was associated with a number of universities, including McGill University, of which he was Chancellor, and he held many honorary degrees; he was connected also with many hospitals and similar institutions, and was a Knight of Grace of the Venerable Order of the Hospital of St. John of Jerusalem. He was a Freeman of four cities in Canada and an Honorary Bencher of the Middle Temple in London; and in recognition of his public services the honour of Knight Grand Cross of the British Empire was conferred on him in 1935.

Until 1918, when Sir Edward Beatty became President, the C.P.R. had had to meet serious competition from private undertakings, many of which had been sanctioned far in advance of traffic requirements. The competition with which he was faced was that of a State-subsidised railway, consolidating all these competitive elements; he had to contend with other transport agencies also, more or less subsidised out of public funds, and in the midst of these difficulties came the trade depression which seriously affected all forms of transport. Scarcely was Canada beginning to recover from the effects of the latter when war was declared, bringing its own operating difficulties. Sir Edward's resourcefulness, sound judgment, and sagacity, in the face of these difficulties, won general admiration. Towards the end of 1939 he was appointed Controller of Shipping for Canada, to work in conjunction with the British Ministry of Shipping, which position he held until September, 1941; and he received from Lord Leathers an expression of appreciation and thanks for the valuable and arduous services he had rendered since the outbreak of war in the creation and development of the organisation on which the Ministry of Shipping, later the Ministry of War Transport, was largely dependent for the execution of its purposes in Canada. Lord Leathers accepted Sir Edward Beatty's generous offer that the services and co-operation of the C.P.R. should continue to be at the disposal of the Ministry. During his term of office as President, Sir Edward Beatty was responsible for many improvements in facilities and services, and for the rebuilding of his company's mercantile fleet, on a scale which has caused its worldwide importance and reputation. His administration will be memorable in the history of the company. A portrait and biography of Sir Edward Beatty appear on page 363, and a map of the Canadian railway system, with a short article giving some of the more important developments on the C.P.R. during Sir Edward Beatty's administration is given on page 362.

Staff Selection and Training

THE subject of education is one of the many important matters now receiving the attention of the Government in connection with its post-war plans, and it is expected that the President of the Board of Education will be in a position shortly after Easter to give a general outline of the national plan which is being formulated. The article by "A Railway Officer" on the education and training of railway staff, which we publish on page 359 is, therefore, opportune. It is a trite saying that the national problems which peace will present are likely to be infinitely more difficult than those of war—construction is always more difficult than destruction—but, in any case, there can be no doubt that the British railways will require the assistance of the best educated and trained staff that they can obtain.

The railways have successfully performed their colossal wartime task, and, in doing so, had to overcome many practical operating difficulties. This has frequently involved the disregard of normal commercial considerations, but when the Government relinquishes its control of the railways, such considerations will regain their former importance. Railway operating under wartime conditions has shown the advantages to be obtained from a closer co-operation than existed between the companies pre-war, but the continuance of such practices in peacetime will raise a number of difficult commercial questions. Further, the

wartime rationalisation of industry and zoning schemes may well be perpetuated in some degree after the war and may necessitate considerable modification in pre-war operating and commercial practice. The most difficult problem of all, however, is likely to be that of the railway relationships with road hauliers. It is clear from the recent speeches of the railway Chairman that the companies feel they cannot rely with any certainty on receiving the "square deal" to which they are entitled in this connection and the satisfactory correlation of rail and road practice will necessitate the use of the very best talent which the railways possess or can acquire.

Our correspondent, therefore, is performing a useful service in drawing attention to the desirability of making radical changes in the pre-war methods of the recruitment and training of railway staff. His proposals for the education and training of the five main sections of railway staff are certainly provocative and will doubtless receive both commendation and criticism. Our own view is that although, in the main, the pre-war methods of the recruitment and training and promotion of railway staff yielded fairly satisfactory results, they did not secure the highest possible standard of efficiency in railway personnel. This fact was recognised by the railways and certain experimental steps were taken by them before the war to secure better results. The L.M.S.R. Staff Training College was one example, and all the companies had arrangements in one form or another for training staff for positions of responsibility.

It is true that, in the past, security of employment was one of the major attractions of the railway service and if this loses part of its importance by reason of social security plans, it is clear that, if the railways are to attract the best type of recruit after the war, they must offer other incentives, including that of an interesting career with reasonable prospects of continuous opportunities for promotion on merit. Probably one of the chief criticisms of our correspondent's proposals will be that they are too expensive. But there is also a danger that the selection of men at a comparatively early age for training for higher positions might have unfortunate reactions on the remaining members of the staff unless they too were given a reasonable opportunity of securing promotion to other positions. This might be met in part by the greater employment of young women before marriage for many of the routine or more or less mechanical tasks now performed by the lower grades of clerks and uniform staff. A further important factor to be borne in mind is that promotion within the wages grades of railwaymen is the subject of many agreements with the railway unions. Few will quarrel with our correspondent's contention that railway managements should endeavour to make the best possible use of all the human material which they employ and he will doubtless be well satisfied if consideration of his proposals leads by any means to the achievement of such a desirable end!

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Locomotive Boiler Steels

A DECISION to go back to ordinary carbon steel for the boilers of the standard 2-8-0 freight locomotives now being built in this country and the U.S.A. to the requirements of the Ministry of Supply, is a reminder that the use of alloy steels in locomotive boiler construction is a comparatively recent innovation, dating in the majority of examples only from well after the last war. The two big Canadian railways were among the first to develop and use what later became almost a standard, namely a 2-3 per cent. nickel steel with an ultimate strength of 35/40 tons per sq. in., and a yield point of a little over half that value. As far as we are aware it was the first Canadian National 4-8-4 engines to which this material was originally applied. Nickel steels began to be used in England for passenger locomotives when working pressures reached 220 lb. per sq. in. Another reason for the introduction of nickel steels was the need for reducing the weight of plates used in the boiler, and so make the fullest possible use, in providing power and steam capacity, of the allowed weights on the axles. The situation has also arisen that when increased pressures were required to be applied to the existing boiler designs, it was necessary that the boiler plates should be strengthened without an increase in weight necessitating a redesigning of the whole engine.

Molybdenum has been added occasionally in order to reduce brittleness, and the steel contains 0.4 per cent. of molybdenum and 0.13/0.16 per cent. of carbon; the ultimate tensile strength is 31/35 tons per sq. in. In certain boilers both chrome and molybdenum have been introduced as alloying elements in an endeavour to get adequate ductility and freedom from temper brittleness. A case in point is to be found in the Pacific engines of Class "04" on the Reichsbahn, the boiler steel of which has an ultimate tensile strength of 33½ tons per sq. in., a yield point of 23 tons per sq. in., and an elongation of 20 per cent. to meet

the needs of a boiler pressure of 355 lb. per sq. in. This high yield point of 68 per cent. of the ultimate figure is above the proportion normally found in alloy steels, and which in turn is above the 40/50 per cent. yield point of carbon steels. In one engine of the Reichsbahn "04" series the boiler is of copper-manganese steel with an ultimate tensile strength of 33½ tons per sq. in., a yield point of 18½ tons per sq. in., and an elongation of 22 per cent. Manganese in small quantities is also to be found in the silicon-manganese steel boilers of the streamlined Atlantic locomotives built some years ago to haul the Hiawatha trains between Chicago and the Twin Cities. Despite the wide, and up to the beginning of the war, increasing use of alloy steels for locomotive boilers, there is one factor which might influence a return to the more normal types of carbon boiler steel, even for pressures of well over 200 lb. per sq. in. applied to large-diameter barrels, and that is any trend towards the adoption of all-welded boilers, such as that incorporated in a heavy freight locomotive on the Delaware & Hudson Railroad. Here carbon steel would be an infinitely easier constructional proposition, and the elimination of riveted joints might make up for any increase in weight due to thicker barrel plates being necessary. It may be said that the return to carbon-steel plates for boiler construction has been occasioned by the austerity demands of war conditions.

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"Freezing" Train Services

DESPITE many differences in methods and practices, the railways of the U.S.A. provide the nearest parallel to those of Great Britain, inasmuch as they serve one of the great countries of the world, and yet are owned and worked by private corporations. Government control, in peace and war, is therefore more directly comparable as between the two countries than as between Great Britain and any of the countries where the main railway systems are owned by the State. Accordingly, it is of some interest to examine the methods adopted in the U.S.A. for "freezing" passenger train schedules and banning the introduction of new trains or the duplication of existing ones. The original Order was issued on September 30 last, by the Office of Defense Transportation, and, as already briefly recorded in our columns (October 30 issue, page 426), this Order restricted the scheduled passenger trains which U.S.A. railways are permitted to operate to those scheduled during the week ended September 26 last. The railways are not allowed to operate extra or special passenger trains excepting in emergency circumstances; they are forbidden to haul chartered or special cars; and are forbidden to operate extra sections to those trains were operated on 20 per cent. or more of the 90 days preceding October 4—the date upon which the Order became effective.

An interesting point in connection with the American arrangements is that precise definitions have been made of the various terms used, so as to avoid ambiguity in regard to what is and what is not an extra train. The Order defines "rail carrier" as any company, or person, or organised group engaged in transport as a common carrier by rail in or through any of the several States of the Union or the District of Columbia. A passenger train is defined as any train operated for the purpose of transporting passengers for compensation, and includes a mixed train. The definition of an extra section is any passenger train operated for the purpose of handling overflow traffic from a scheduled passenger train, and which leaves the terminal of origin not more than 15 min. before or after the published departure time of such scheduled passenger train. It is specified that the provisions of the Order are subject to any special or general permit issued by the Office of Defense Transportation to meet specific needs or exceptional circumstances arising from the war, or to prevent undue public hardship. Also, the provisions of the Order do not apply to passenger trains or carriages operated in the service of Government agencies or departments, not to extra sections made necessary to handle persons travelling under order of Government agencies and departments. In addition, the railways may operate trains or extra sections in emergencies caused by accident, public calamity, military necessity, or train delays, but the railway management must report in writing to the Office of Defense Transportation, within 48 hours of such operations, fully explaining the nature of the emergency conditions.

By a subsequent Order, issued on October 8, the continuation of the operation of private or chartered carriages in suburban services is permitted in certain circumstances. This covers a scheduled passenger train furnishing daily return trips on suburban services and operating not fewer than 5 days a week. Such trains may include a carriage for which the use, by prior

This high above the in turn is. In one of copper- 33½ tons and an ties is also the stream- haul the . Despite easing use factor which of carbon per sq. in. and towards incorporated son Rail- construc- tions might rrel plates carbon-steel by the

the mail to those of countries corpora- before more than as where the singly, it is the U.S.A. the intro- nes. The Office of Defense Transportation that United States train schedules in general shall be lengthened, our American contemporary the *Railway Age* dissents entirely from the policy thus laid down, contending that this is not the right path towards improved railway economy and efficiency in wartime. The argument, and there is much to commend it, is that today the railway personnel, fixed equipment, and rolling stock are all geared to higher speeds, and that any wholesale slowing down must inevitably result in reducing the total railway capacity. Higher average running speeds, which are achieved as much by reducing delays as by running faster, are one of the most important factors in making possible the present unprecedented intensive use of equipment, and especially in the passenger realm, in which cuts of an hour and more from schedules have often enabled stock to be used for a return journey shortly after arrival, instead of standing idle for hours. Maximum use can be made of train staffs also, within the compass of their hours of duty, in this way. Although it is true that the schedule of trains which persistently run late, by reason of overload or other causes of delay, should be increased to the point at which time can be maintained, there are many passenger runs in the U.S.A. on which any considerable lengthening of schedules is likely to reduce the utilisation of rolling stock by 50 per cent. Furthermore, the risk of bomb damage causing interruptions of service—an important factor in deciding the extent to which trains should be slowed in Great Britain during the war emergency—is negligible, if not practically non-existent, in the United States.

The gravamen of our contemporary's charge, however, is that the O.D.T., as representing the Federal Government, is attempting to force on to the railways decisions which ought to be left to the railway administrations alone. In the last war the American Government not only told the railways what it wanted done, but also how to do it, and the results were demonstrably bad. In this war also the Government has told the railways what it has wanted done, but hitherto, in the main, has left the railways themselves to decide how to do it, and the results have been commended on all hands. Now, however, it is suspected that certain Governmental agencies, staffed by pencil-and-paper theorists without practical experience or personal knowledge of railway conditions, are putting pressure on the O.D.T. to demand changes which the facts do not justify. Actually, in the first seven months of 1942, the railways increased their freight performance over the previous peak year of 1929 by

37 per cent., with a reduction of 25 per cent. in the number of locomotives and 19 per cent. in the number of wagons available to handle the traffic. Passenger traffic is 40 per cent. above that of 1929, and the number of locomotives and passenger cars available is only 55 and 67 per cent. respectively of the number in use in 1929. The greatly increased average power of locomotive units, of course, has played some part in these figures, as has also the greater efficiency of traffic control and train working generally; but there is little doubt that the all-round acceleration of train schedules has been the factor mainly responsible. To present a balanced view, our contemporary might have referred to the fact that increased speeds undoubtedly call for heavier expenses in fuel, oil, and in the maintenance of rolling stock and track, and these considerations must be borne in mind in relation to shortage of men and material. But as the *Railway Age* points out, there is no justification for thinking in terms of the slower and less powerful locomotives and less efficient methods of the past in deciding the policy best calculated to solve present problems.

Railway Rates Tribunal

THE annual report of the activities of the Railway Rates Tribunal for 1942 has just been issued and it is interesting to find that, notwithstanding war conditions, the traders' right of appeal to this body continues unimpaired, although, as might be expected, it was not exercised very freely during the year. The report, which marks the 21st year of the operations of the tribunal, shows that the bulk of its work arose in connection with the approval of agreed charges. During 1942, 604 applications for agreed charges were filed with the tribunal, an increase of 97 compared with the previous year. All these applications were made by the railway companies and no objections were raised by traders. During the year 588 such charges were agreed, of which 468 related to merchandise train traffic, 118 to passenger train traffic, and 2 to both merchandise and passenger train traffic. The 588 orders which were issued covered the whole or a specified portion of the traffic of 629 traders and 114 orders related to new agreed charges, the remainder being renewals or substitutions with or without modifications of charges previously approved.

With regard to other matters arising out of the Railways Act, 1921, ten applications by railway companies for the approval of exceptional rates were approved, as were also four applications by railway companies for alterations and additions to the classification of merchandise and reductions for owner's risk. Three applications by traders were heard during the year for declarations that nothing contained in condition 8 of the conditions lettered "A" of the standard terms and conditions of carriage should be a bar to the maintenance of proceedings against certain railway companies for the loss of goods, but in only one of these was a trader successful. The tribunal also carried out its statutory duty of reviewing the operation of the Railway Freight Rebate Scheme, and came to the conclusion that the rebates to be allowed during the year ended September 30, 1943, should remain unchanged from the previous year.

TRACK MAINTENANCE IN WARTIME.—Mr. J. B. Martin, General Inspector of Track of the New York Central System's lines west of Buffalo, when addressing the war convention of the Roadmasters' & Maintenance of Way Association at Chicago in September last, said that, in carrying out relaying programmes, all heavy work on the track, including bank widening, ballast cleaning, reballasting, and heavy renewals of sleepers, should be completed at least a year before the rail itself is renewed, so that the old rail may take the punishment involved in these operations, rather than the new. If this precaution be taken, he claimed, new rail is laid on a good consolidated foundation, and it is easier to maintain the renewed track in good surface and condition. In the same address stress was laid upon the maintenance of quality as the primary essential in all relaying work; speed in relaying at the expense of quality is only laying up future trouble in store; and if the rail is not correctly laid and properly conditioned at the start, no amount of subsequent attention and labour will give satisfactory maintenance and ensure maximum life. In the factors on which maximum track service depends there was nothing new—the proper fit of fishplates, lubrication of fishplates and rail-ends to protect against corrosion and "frozen" joints, uniform fishbolt tension, correct expansion gaps, sufficient anti-creeping appliances, sound sleepers, adequate clean ballast, and good surface—but they cannot be too frequently recapitulated, and in wartime the necessity for conserving materials to the maximum possible degree makes them even more important than in peace.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Non-stop Runs and Bearing Temperatures

The Timken Roller Bearing Company,
Canton, Ohio, U.S.A.

Feb. 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—With reference to the letter from Mr. H. Young, Chief Mechanical Engineer of the Department of Railways, New South Wales, carried on page 6 of your January 1, 1943, issue, in accordance with your notation at the end of this letter, we have written Mr. Young and you will find a copy of our letter attached for your information.

We are also sending you a copy of the roller bearing report which we made to the United States Board of Investigation and Research, Transportation Act of 1940, which is mentioned in our letter to Mr. Young.

Yours truly,
WALTER C. SANDERS,
General Manager Railway Division

[The letter to Mr. Young is reproduced below in view of the general interest of the matter contained in it.—ED. R.G.:—]

"I have noticed your letter in the January 1, 1943, issue of *The Railway Gazette* in regard to 'Non-stop Runs and Bearing Temperatures.' The railroads in the United States are keeping down bearing temperatures and hot boxes by using roller bearings. Practically all modern steam, diesel, and electric locomotives now being built in the United States are equipped with roller bearings on all axles. We have quite a few locomotives with the bearings on the crank pins and crossheads, and the light-weight reciprocating parts are made from Timken high-dynamic steel. The railroads which have used the Timken crankpin bearings have asked for additional locomotives of the same design.

"Many railroads in the United States have converted existing locomotives with brass journal bearings to Timken roller bearings in their own shops, and after these locomotives have been converted the railroads obtain from 35 per cent. to 100 per cent. more mileage in the same period of time, and their maintenance costs are reduced an average of 42 per cent. over the

cost when the locomotives were on friction bearings. Then, by going further and applying Timken roller bearings to the crank pins and crossheads and using Timken light-weight reciprocating parts, one railroad has obtained 16 per cent. more mileage and another railroad has obtained 2,000 more miles a month with roller bearing engines.

"The Chief Mechanical Officers of the roads in the United States using roller-bearing locomotives would not think of building a new locomotive without completely equipping it with roller bearing engines.

"The Pennsylvania's Broadway Limited, the New York Central's Twentieth Century Limited, between New York and Chicago, and the Burlington's Zephyr and the Union Pacific's Streamliner, the high speed streamlined trains between Chicago and the Pacific Coast are all roller-bearing equipped. The distances between New York and Chicago and Chicago and Denver are approximately 1,000 miles each and we have been advised by railway operating officials that were it not for the roller bearings, it would be necessary to have double sets of equipment to operate these high-speed trains.

"Some time ago we were advised by the Board of Investigation & Research, Transportation Act of 1940, U.S. Government, Washington, D.C., that in its studies of the railroad industry it had selected roller bearings for various railroad applications as one of the most important actual or potential improvements and was interested in obtaining as much information as possible on this subject. We made a report to this board and we are sending you a copy of it. In going over the report, you will note that we have quoted many railroad authorities and a large part of the report consists of what these authorities have said about railway roller bearings in various public statements. We are also sending you a copy of the December, 1942, issue of the Baldwin Locomotive Works' magazine. You will note that the leading article describes a modern high-speed steam locomotive built by Baldwin for the Pennsylvania Railroad. All journal bearings of the locomotive and tender, the crank pin bearings, and crosshead bearings are Timken roller bearings. In addition, the main and side rods are of Timken design and the light-weight reciprocating parts are of Timken design and high-dynamic steel. These locomotives are operating between Harrisburg, Pennsylvania and Chicago, Illinois, a distance of 713 miles.

"The use of roller bearings on all types of railroad equipment seems to offer the railroads the largest return on any single investment they could make."]

Publications Received

Modern Engineering. By C. H. S. Tupholme. Faber & Faber Limited. London: 24, Russell Square, W.C.1. 9 in. x 6 in. 195 pp. Illustrated. Price 15s. net.—This book is intended to put on record the more recent developments in engineering and is expected to bridge the gap which will be occasioned by war service in the training of young men at the outset of engineering careers. The chapters cover a wide range of subjects among which are mechanical power, electrical engineering, traction, marine engineering, and aircraft. The author has selected what he considers to be outstanding developments in the various fields and describes their salient features. The treatment is necessarily somewhat sketchy, but at the same time it includes some technical data. As a handy guide or work of reference this book would have had its value enhanced if it had given bibliographical references to assist readers in search of more complete information on particular developments.

The Railway Trainman. By J. Aitken, District Inspector. 128 pages, 4 in. by 6½ in., 35 illustrations, including some drawings of equipment. Published by S. B. Aitken, 51, Crosshill Street, Lennox-town, Stirlingshire. Price 2s. net.—This booklet incorporates an earlier and well-known publication of Mr. Aitken's series called "The Trainmen's Manual" and forms a concise guide to an understanding of the rules and regulations with which every trainman must be familiar if he is to do his

work intelligently and, above all, act correctly and promptly in an emergency. The author has for some time been engaged on revising the numerous useful works he has compiled for the use of railway staffs. The war has prevented him from going as far in this direction as he would wish. Nevertheless this new edition is well arranged and contains a large amount of important detail deserving of careful study by every trainman. Every important operating rule is touched on, and signal aspects, wrong line forms, the principal features of the vacuum brake and the mechanical lubricator receive suitable treatment. The differences between the rules in force on the various railways are carefully pointed out, although, as the author says, it is not very easy to reconcile these variations. The outlines of the duties of the various grades of the service are well expressed and the booklet should meet with general approval.

Mechanical World Year Book, 1943. Emmott & Co. Ltd., Manchester, 20: 78, Palatine Road. 6½ in. x 4½ in. 360 pp. Price 2s. 6d. net.—Once again this small book will fill the need in every engineering workshop and office for a handy and up-to-date work of reference. Much of the material in the last edition has proved of sufficient usefulness to be retained with only minor revisions but certain sections, notably that dealing with press work, have been largely re-written and enlarged. Recent data are included in the tables of speeds and feeds of certain kinds of cutting tools. An entirely new section brings together the data relating to light metals and alloys;

special attention has been paid to the important wrought light alloys. This section is expected to be of special value to those engaged in wartime industry. Another new section deals with the selection and substitution of manufacturing processes. Useful information is given in this section on die-casting and plastics.

Warne's Wages and Overtime Calculator. By H. S. Stillwell. London: Frederick Warne & Co. Ltd., Chandos House, Bedford Court, Bedford Street, Strand, W.C.2. 8½ in. x 6½ in. Price 6s.—This book contains tables of wage rates from 1/40th of an hour to 100 hours at 3d. to 3s. an hour, and will be of value to firms which employ labour on a time-rate basis. An overtime calculator is provided which shows the hourly values of overtime rates.

British Standards for Workshop Practice.—Savings can be effected in stocks of tools, and delays in obtaining the right tool for the job can be avoided, if designers will adhere as far as possible to B.S.I. Standards for screw threads, splines, keyways, ball and roller bearings, limits and fits, and so on. Our attention has been directed by the Ministry of Supply to a comprehensive publication on the subject of standards which can now be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1. The book has the same title as this note and its price is 7s. 6d. or 8s. 3d. post free. Among other standards will be found those covering the manufacture of materials; there is a summary of British Standard steels and also a section on cast iron.

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The Scrap Heap

A ten-year plan for China, involving the construction of 12,500 miles of railway, 220,000 motorcars, and 12,000 transport aeroplanes, is proposed by General Chiang Kai-shek in his book "China's Destiny." The official English summary of the book was released recently, and the English text will be available shortly.

Lord Glenavy, in his speech to Great Northern Railway Company (Ireland) stockholders, pointed out that commercial accounts in their familiar shape would give a more informative picture of the situation than the form in which the company was required by law to present its accounts. For three years it was our practice to publish summarised versions of the accounts of the four companies, set out in the form usually adopted by commercial companies, and the last appeared in our April 4, 1930, issue. As a matter of interest we reproduce herewith, the profit and loss account and balance sheet of the Great Western Railway Company for the year ended December 31, 1929, as prepared in the usual form of a public limited liability company.

GREAT WESTERN RAILWAY COMPANY.

SUMMARISED PROFIT AND LOSS ACCOUNT for the Year ended December 31, 1929.

To Running Expenses, Maintenance and General Charges—	£	s.	d.	£	s.	d.	By Receipts—	£	s.	d.	£	s.	d.
Railways	24,300,540	15	7	Passenger and Parcels			Traffic	12,781,185	7	5			
Road Transport	132,351	16	6	Goods Traffic	17,976,976	15	9						
Steamboats	342,113	8	9	Joint Lines and Miscellaneous	276,908	2	11						
Canals	48,300	19	7					31,026,475	0	1			
Docks, Harbours and Wharves	3,540,814	15	3	Road Transport	110,183	11	5						
Hotels, Refreshment Rooms and Cars	624,522	15	0	Steamboats	228,405	16	3						
Collection and Delivery of Parcels and Goods	1,300,378	8	4	Canals	16,277	10	8						
				Docks, Harbours and Wharves	3,000,148	10	9						
Interest, Rentals and other Fixed Charges	3,211,379	0	5	Hotels, Refreshment Rooms and Cars	663,068	2	11						
Balance carried to Balance Sheet	6,646,904	12	10	Collection and Delivery of Parcels and Goods	922,322	2	7						
								36,194,063	0	8			
								912,775	0	1			
								495,635	1	4			
								2,550	18	4			
								472,030	4	7			
											238,000,034	14	0

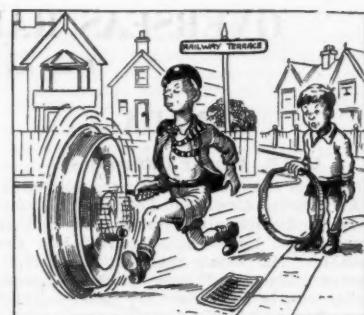
SUMMARISED BALANCE SHEET as at December 31, 1929.

Capital Receipts (apart from Premiums and Discounts)—	£	s.	d.	Expenditure on Lines, Rolling-Stock, Works and Plant—	£	s.	d.
5 per cent. Rent Charge Stock	7,782,038	0	0	Balance at January 1, 1929	144,028,377	16	1
5 per cent. Consolidated Guaranteed Stock	21,848,811	0	0	Expenditure during year	94,383	4	4
5 per cent. Consolidated Preference Stock	31,446,000	0	0		144,122,741	0	5
5 per cent. Redeemable Preference Stock (1950)	6,000,000	0	0				
Consolidated Ordinary Stock	46,176,537	0	0				
	115,366,386	0	0				
Debentures and Loans	38,152,083	0	0				
Promises on Shares, Stocks and Debentures							
Unpaid Interest and Dividends							
Trade Creditors, including Interest and Dividends accrued							
Superannuation and other Provident Funds							
Miscellaneous Funds							
General Reserve Fund							
Profit and Loss Appropriation Account							
Balance at January 1, 1929	104,630	11	8				
Add—							
Transformed from Profit and Loss Account	6,646,904	12	10				
	6,783,566	4	6				
Less Interim Dividends	3,854,380	12	7				
	3,869,300	13	7				
	£200,000,000	11	8				

Some 804,339,000 railway tickets have been collected on the British railways during the last twelve months and have been sent for re-pulping. This means that 602 tons of valuable card has been returned to the manufacturers.

The world's shortest double-track railway, the 750-ft. line connecting the Capitol and Senate buildings in Washington, has completed 31 years of operation without an accident. The train makes about 225 trips a day, carrying senators and visitors between its two terminals, and the run is completed in about 45 sec. at an average speed of 12 m.p.h. Little wicker carriages run through a subway on a single rail; they are held upright by a second rail, fixed in the roof, which supplies current to their 7-h.p. motors. They are built in the Washington navy yard, and senators sometimes say that this explains why they "roll like little boats in a choppy sea."

The "slot" is a familiar and conspicuous object at the railway stations, and it has done some service as a stamp retailer. An experiment is now being made by the North London Railway Company with a view to



The railwayman's son. Another cartoon by G. Ford of Leigh-on-Sea

its introduction in the capacity of a ticket distributor. For some time past the weekly workman's ticket has been superseded by a daily issue, so that the passenger missing his train does not lose his workman's ticket in addition to paying his ordinary fare. The result of the change was the loss of much time and patience in booking the vast number of morning travellers, notably at Dalston Junction. This delay is now to be obviated by the "slot" machine, which issues tickets between Dalston and Poplar, Chalk Farm, and Broad Street Stations. Should the supply of tickets become exhausted the fare is returned upon pressure of a knob on the machine.—From "Transport" of August 3, 1894.

Fleetwood was the leading L.M.S.R. port for fish last year; the highest intake in one day was 937 tons (a meal for 8 million persons) and required 230 wagons. In every case the fish is despatched the same day as it is landed, and L.M.S.R. staff sometimes have worked for thirteen hours a day to make this possible.

WATTON HOUSE

(The Training School for L.N.E.R. women clerks.)

To Watton House we have to go
And this is our big chance;
For there we learn about the "goods"
And not just how to dance.

In fact, we're really going to school
And find it quite a pleasure;
For in our quarters—self-contained—
There's room for work and leisure.

Not only goods, but passengers
Are studied in our courses;
We know the rates for wireless
And what to charge race horses.

We're also taught to use a 'phone
With brevity and diction,
To cultivate the "golden" voice
And not cause any friction.

We're learning, too, about through loads,
And how to deal with grain sacks,
When to insist on "C. & D."
And when allow the "drawbacks."

With "G.R.C." we're quite O.K.,
And all its definitions;
We're growing used to merchandise
And all its prohibitions.

For victory we are prepared,
And transport is our sector;
We thank our tutor, and, of course,
Our C.G.M. Director.

WM. E. NEWTON

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

C.N.R. Winter Difficulties

Further information to that published in *The Railway Gazette* of February 19, concerning the difficulties due to bad weather experienced by Canadian railways at the end of 1942 shows that, on the C.N.R. system alone, well over 1,500 telegraph poles were brought down by ice formations from 2 in. to 3 in. deep on the wires, causing loads, in some places of as much as 4 tons on spans between adjacent poles. Approximately 15,000 miles of wire were affected, and nearly 600,000 ft. of emergency cable was required to bridge the gaps as a measure of first-aid repair; the cable was strung along fencing or beside the track. Special gangs of linemen were sent from all over the system to help in coping with the situation. Meanwhile, snow drifts had to be cleared in many areas. Landslides occurred in British Columbia.

UNITED STATES

Replacing Level Crossings

The Seaboard Air Line Railway has contributed to the nation-wide search for scrap steel by taking up a large number of level crossings in the construction of which a considerable tonnage of old rails had been used. This method, which has been in vogue chiefly in large cities where the road traffic is heavy, such as Richmond, Portsmouth, Petersburg, Jacksonville, Tampa, Miami, and Raleigh, was first devised in 1928, and consisted in laying lengths of worn rail parallel to the running rails, across the width of the crossing, with their feet in contact, and then filling up the space between them with road metal. The removal programme covers 196 such crossings, and is expected to realise 2,500 tons of steel. In substitution, a base course of crushed-stone ballast is being used, topped with a wearing surface of cold asphalt mix; and a standard type of crossing construction has been evolved for the purpose. As a replacement operation, this example is one of the first in the U.S.A. in which a form of construction which was serving its purpose admirably has been replaced solely in order to salvage the material which it contained.

Record Mileage Abandoned in 1942

Statistics lately published show that the aggregate abandonments of United States railways in 1942 reached a new high level of mileage. In all, a total of 2,516 route-miles of line were closed, which exceeded the 1941 total by 1,007 miles; and 1942 was the first year on record with an aggregate of more than 2,000 miles of abandonments. The previous high record was 1,995 miles in 1934. Of individual abandonments, the longest stretch was the historic 141 miles of Southern Pacific line round the north shore of the Great Salt Lake between Lucine and Ogden, Utah, once the main line to San Francisco, but of little importance since the opening of the Lucin cut-off across the lake. Next longest was the Hastings and Linwood line of the Chicago & North Western Railway (102 miles, entirely in Nebraska); and after that the 91 miles of the St. Louis-San Francisco Railway between McNair, Arkansas, and Dills, Oklahoma. Fourth on the list, and the largest abandonment of an entire railway,

was the 76 miles of the Pacific Coast (California) Railroad between Los Alamos and Port San Luis, with the branch from Suey Junction to Sisquoc. Another completely abandoned railway is the Cisco & Northeastern from Cisco to Throckmorton, Texas, 65 miles; and the Susquehanna & New York abandoned its entire line between Towanda and Marsh Hill Junction, Pennsylvania.

There has been some acceleration of railway closures because of the demand for scrap, by the War Production Board in particular, which doubtless helps to account for the 1942 record, but the latter now has been compelled to modify its rather abrupt methods of seizure of unprofitable lines for scrap in favour of obtaining a preliminary certification by the Office of Defense Transportation that service over the lines to be abandoned is no longer necessary in the war or civilian interest. The year 1942 is the eleventh consecutive year in which U.S.A. railway abandonments have exceeded 1,000 miles.

A Race with the Ice

The race in Minnesota to get the record quantity of 42,000,000 tons of iron ore to the Duluth-Superior docks before the November freeze-up closed the Great Lakes to the ore-boats, which was achieved successfully, was aided greatly by the delivery in mid-October of the last of 500 70-ton ore wagons ordered by the Duluth, Missabe & Iron Range Railway from the Pullman-Standard Car Manufacturing Company, and built at the latter's Michigan City plant in Indiana. The railway company placed orders in March, 1942, for 2,000 of these bogie hopper ore-wagons, but, before work could be begun, the War Production Board "froze" the construction of freight vehicles and the railway thus had to fight against the effects of two different kinds of "frost." It was not until May 11 that release could be obtained for 1,500 instead of 2,000 of the wagons required. The order was divided equally between three building firms, and the Pullman-Standard Company is the first to complete, in no more than five months.

Station Damaged by Fire

On December 4 a serious fire at Nashville, Tennessee, seriously damaged the freight station of the Tennessee Central Railroad, and resulted in damage which is estimated at a total of \$200,000. The cause of the fire has not been established.

VENEZUELA

New Transport Regulations

Recently-issued new transport regulations provide that certain foodstuffs, including raw sugar, lard, domestic cheese, milk, meat, fish, eggs, fruit, vegetables, poultry, and peanuts, may now be carried by motor lorry between Puerto Cabello and Valencia, thus competing with the direct railway. Having discharged its cargo, the motor lorry may then transport any kind of commodity on the return trip, provided it is loaded to at least one half of its capacity.

Train Service Continuance Ordered

The Compania del Gran Ferrocarril de Venezuela has been instructed to continue its train service between Las Tejerias and Valencia; its Sunday trains between Caracas and El Encanto; and its motorbus service between Caracas and Valencia.

Motorbus Fares

Maximum passenger fares on the Andean motorbus line between Caracas and San Cristobal (near the Colombian frontier), have been fixed at 32 bolivares (approximately \$9.50) for the entire journey of 1,088 km. (676 miles).

Petroleum Lorry Limitations

Motor lorries carrying petroleum are prohibited from entering certain areas which can be serviced satisfactorily by railway.

SWEDEN

State Railways Motor Traffic

At the commencement of the present year the Swedish State Railways were working motor vehicle services over 9,477 km. (5,889 miles) of route, but restrictions on fuel and supplies and other causes have now reduced the figure to 7,444 km. (4,625 miles). The traffic is about 45 per cent. of what it was just before the war. At January 1, 1943, there were 472 buses and 87 lorries running. Nearly 90 per cent. of the services are operating on producer gas obtained from wood.

Remodelling of Ånge Yard

Ånge Station, on the Swedish State Railways, forms one of the most important junction points for the Upper Norrland routes. Before the last war, during which a large increase in traffic had to be handled, both Ånge and Bräcke Stations dealt with the marshalling of trains serving the Norrland, Östersund, and Sundsvall lines, but when the need for economies became pressing in the post-war years Bräcke ceased to be a station of more than local importance. For some years the arrangements at Ånge proved fairly satisfactory, although not answering all requirements, but with the increase in traffic arising from the present conflict it became necessary to effect a substantial improvement. The traffic increased from 500 to 1,800—even now and then 2,500—wagons a day.

Electrification has enabled heavier trains to be handled more expeditiously; but considerable delays were often experienced at Ånge as a result of want of facilities. The two lines from Bräcke and Alby entered the station to the west; their train paths conflicted with others and hampered movements, and the fact that all through trains had to reverse gave rise to a good deal of engine shunting. It was impossible to extend the marshalling yard westward and many of the tracks were too short, and goods trains to and from Bräcke were limited to one track.

It was decided to put in new carriage sidings, build a line, diverging from the line from Bräcke some distance to the west of the present yard, to form a separate incoming goods-train line, and divert the main Alby line, which connects with Stockholm, about half-a-mile south of the present layout, taking it in a loop to the east and bringing it round to run in, in a westerly direction, parallel with the line from Sundsvall. The number of marshalling tracks is being raised from 20 to 32, and the yard lengthened as well as the reception and departure lines. Work was begun in 1940 and the new deviation line was opened for traffic on December 12, 1942. The entire scheme is expected to be completed during the present year at a total cost of about 3 million kronor. The deviation from Alby is a single line but the engineering works have been arranged for doubling at a later date.

Subway System for Chicago

Two underground routes, the first in the city for passenger service, are being completed in Chicago, to connect with the elevated lines and relieve congestion in the business districts

CHICAGO has followed the course taken in other cities of America, as exemplified by the arrangements made in New York, detailed in our issue for January 1, 1943, and embarked on a comprehensive plan of unifying its transport facilities. This was proposed many years ago but only recently have the final decisions been taken. Hitherto the transport system of Chicago has been in the hands of three competing undertakings. These are being amalgamated into one company to which a franchise is to be granted laying down the terms under which it will operate all forms of public service vehicle. Associated with this change is the construction of underground (subway) lines to relieve the serious congestion in the business districts. Hitherto the only subway services have been narrow-gauge goods transport lines, long a feature of the city.

At present more than three quarters of the traffic is conveyed by trams, trolleybuses, and motorbuses. The remainder is dealt with principally by the elevated lines, which are somewhat extensive, and on some sections of these the services are very frequent and well patronised. There is a double-line loop arrangement of tracks in the centre of the city over which trains run from no fewer than 13 elevated railway routes, up to 36 trains an hour passing along one line at the peak in spite of the awkward junction arrangements at three corners of the loop. The speed there is as low, however, as 6 m.p.h. The two new subways are (1) the State Street subway, connecting the north-side and south-side elevated railways, nearly 5 miles long, and (2) the Dearborn Street subway, nearly 4 miles long, beginning with a terminal loop in the business area and extending to meet the Logan Square elevated line in the north-west district. The costs are estimated at \$33,750,000 for the State Street, and \$30,400,000 for the Dearborn Street subway.

The main construction work is practically completed for the former route; the connections to the elevated lines at each end are now being pushed forward. All the stations are well towards completion. The authorities have recognised that, in spite of the war, the materials must be found to allow the line to be brought into use as early as possible, since the rationing of tyres and other motor vehicle equipment has caused a heavy decline in motor traffic and a large increase in the congestion affecting existing public vehicle services, of all kinds.

The new lines have been built at moderately deep levels by tunnelling through soft clay under air pressure and using re-inforced concrete lining, except in the short surface approach sections. The stations are approached by steps from the street and consist of a single booking hall or circulating area, from which escalators lead to the platforms, themselves generally about 40 ft. below pavement level. A few stations have side platforms and the remainder island platforms, 500 ft. long. In the most congested area, however, there is a continuous platform

3,300 ft. long, with several station halls above opposite the various main blocks of buildings. This long platform has berthing places for trains working various routes, arranged to distribute the streams of passengers to the best advantage. Special care has been taken to make the stations bright and attractive and to meet the rather bad atmospheric conditions obtaining. Fluorescent lighting is used. As it was expected that there would be difficulties in obtaining material, practically all contracts, except that for signalling, were placed in 1941.

The subway proper contains practically no cables; these are run in special ducts and runways, along which the staff can walk, parallel to the tunnels. The strict requirements laid down in this respect necessitated the whole electrical installation being decided on and planned very early in the work. As the State Street line is parallel to an elevated route and much of the business-area traffic will be transferred to it, existing sub-stations, operated by the Commonwealth Edison Company, are serving to feed it and new generating plant is not being provided by the subway. The third rail, 600 volt d.c. system, already in service on the elevated lines, is used, with a 144 lb. rail, heavily re-inforced with paralleling feeders, connected every 1,000 ft.; the continuous traction rail, welded except at special places, is also re-inforced for the return circuit. The third rail is not welded. This part of the work is not completed yet but is being so described for convenience. A complete supervisory control with remote switchgear operation has been adopted, with storage battery feed to cover any supply failure, and stand-by cable conductors. Special alarm signal locations are placed at intervals in the tunnels from which power to adjacent conductor-rail sections can be cut off at once and an alarm given at the control room.

Subsidiary machinery for pumping and ventilating is being operated from a.c. mains through a number of switchboard rooms and the normal lighting arrangements are similarly supplied, with alternative d.c. supply. The lamps in the tunnels, of the ordinary incandescent type, are shielded to protect the motor-man's eyes. Generally, the movement of the trains is being relied on for ventilating but the deeper sections of the line at the Chicago River crossing, will have fans always running, while other fans can be put in operation if need be elsewhere. The signals are automatic and semi-automatic colour lights, combined with electro-pneumatic train stops and point mechanisms, operated in interlocking areas by entrance-exit type panel frames. The single rail a.c. track circuits have vane relays. Plug-in relays working on 10 volts d.c. circuits are used for local controls. The a.c. signal supply is received at eight points, transformed and rectified, as circumstances require, and distributed over duplicate mains. Two air compressor plants feed a main in each tube, with branch pipes to local equipment.

As the State Street route is now ready (see p. 370), before new rolling stock could be obtained, the existing steel stock of the Chicago Rapid Transit Company is to be used at first; the trains will be made up principally of motor cars. The new trains are to have 3-car 4-bogie articulated units; each car will seat 106 persons. All axles are motored with a 110 h.p. motor giving a free running speed on the level of 45 m.p.h. and 3 m.p.h. per sec. acceleration. The main features of the P.C.C. tramcar equipment are incorporated, giving exceptionally smooth and silent running.

It is particularly appropriate that Chicago should have an underground line of the most modern type, to continue the tradition of progress in electric traction with which the city has been identified since the first successful experiments with the true multiple-unit idea were conducted there by Sprague in 1897.

Earlier references to the Chicago subway and unification schemes were made in our issues of May 31, 1940 (page 772, with maps), and September 6, 1940 (page 248).

Swedish Railway Electrification

The advantages derived from the electrification of Swedish railway lines are reported to have been so great that the Railway Board proposes the continued electrification of the Swedish State Railways system. Before the war it was stated that, in view of the coal prices prevailing at that time, the electrification of the remaining State Railway lines would not be remunerative, but the present state of the fuel market has altered the position, and, from the viewpoint of national defence continued electrification is deemed desirable. According to a report submitted to the Government by the Railway Board, the choice is now between the lines Varberg—Borås—Herrljunga—Vänersborg—Uddevalla (136 miles); Östersund—Storlien (101 miles); Borås—Alvesta (93 miles); Alvesta—Karlskrona (83 miles); Emmaboda—Kalmar (35 miles); Boden—Karungi—Haparanda (104 miles); and Kilafors—Söderhamn (21 miles).

For many reasons the two lines first-mentioned are recommended to be dealt with immediately. The total cost of electrifying the Varberg—Borås—Herrljunga—Vänersborg—Uddevalla line is estimated at Kr. 28 million, and the Östersund—Storlien line at Kr. 17.9 million, or a total of Kr. 45.9 million. An amount of Kr. 9.6 million would be taken from the State Railways renewal fund, according to the Railway Board's scheme, and the remaining amount provided by Budget allowances during the next four financial years. For the first of these years an allowance of Kr. 7 million is sought for the Varberg—Uddevalla line, and of Kr. 6 million for the Östersund—Storlien line. It is intended to begin work on the Uddevalla—Vänersborg—Herrljunga section, estimated to be completed for electric working by the end of 1944; and on the Östersund—Järpen section, to be completed in the first half of 1945.

At present the electrified lines of the Swedish State Railways are stated to amount to 2,651 route miles; the figure for the private railways is about 370 miles. An article, with map, on electrification in Sweden was published in our issue of December 11, 1942, page 573.

Electric Traction Section



Revised map of the railways of Italy indicating the recent extensions to the electrified mileage.
The frontier communications with neighbouring territories are clearly shown

Education and Training of Railway Staff

The railways should vitalise their methods of recruitment and training

(By a Railway Officer)

Schemes for the education and training of railway staff have sometimes been regarded as frills, nice for companies which could afford them. Today such a view is out of date, for by now we have learnt that it is at least as important to select and make the best use of all human material as it is to do this with machines. It is, of course, more difficult. Human beings have wills and minds of their own; but the results make it worth taking much trouble to do well.

Selecting Recruits

Selection is the first hurdle. The choice open to the employer depends on the attractions of the work he is offering, when compared with other available work. It is worth noting here that the future may differ considerably from the past. Railways have been accustomed to rely a good deal on the fact that they offered to their employees a degree of security greater than that in most other industries. If, however, anything like full employment is achieved, and if general social security is provided for all by the Beveridge plan, the security offered by a railway job will lose much of the scarcity value it has had in the past. To enlist the right kind of recruits, it may well be necessary to make the railway service more attractive. One way of doing this is to adopt a comprehensive scheme for the education and training of staff in all grades. For the corollary of any such scheme is to use it as a guide to promotion, a ladder of opportunity for all members of the staff, and the knowledge that such a scheme exists and is being so used will itself go far to attract recruits of the right quality. Staff education and training, coupled with promotion by merit, is therefore justified not merely as broad-minded humanitarianism, but as a policy for hard-headed business men.

Assuming that the right kind of recruit is attracted, the initial selection should be done with all possible care. The skilled judgment of experienced selectors can be aided by the vocational testing methods developed by industrial psychologists. The latter methods will be valuable not only in selecting but in directing recruits to the department where they are likely to be most useful. This will certainly be the department in which each individual will eventually find the most congenial work, though not necessarily that which young recruits themselves may choose unaided by expert advice.

Groups

For purposes of education and training railway staff can be divided into five groups: operative, clerical, supervisory, technical, and administrative. No distinction is made between skilled and unskilled, because even in the humblest grades some degree of skill is required. "Operative" is a term which approximately covers the lower paid posts in what are now termed wages grades. "Clerical" includes the lower-paid clerical posts. "Supervisory" staff are the N.C.Os of the railway in both operative and clerical grades, and will continue to be recruited not direct, but by promotion from those grades. Technical staff will possess varying technical skill and qualifications. Administrative staff will correspond to the

administrative grade in the Civil Service, but should be recruited both from inside and outside the railway service.

Education and Training

Education is not the same thing as training. Training means training in specific duties. Education means helping each person to develop the best that is in them. It is a much wider term than training and grows in relative importance as the type of work broadens. Education therefore is most needed in the administrative group, but if everyone is to be offered the chance of promotion into that group, some opportunities for education must be available to all groups. Then and only then can we be reasonably sure that we are making the best possible use of every man and woman in the service.

There is another distinction between education and training. Training is given for specific and limited periods. Education is, or should be, a continuing process, ending so far as railway work is concerned at retirement, and for the individual, at death. That means that, far more than with training (which can to some extent be pumped into reluctant human beings), education depends very largely on the response of each individual, on the use made of opportunities given or seized. That is why the response to education, as distinct from training, is such a useful guide to those who have to select people for the more important posts. Anyone who fails to realise that his own education is going on all the time, who thinks that education ends when the final examination is passed, is unlikely to rise far in any sphere, certainly not in a modern transport business.

Methods of Education and Training

(1) The Operative Group

Men and women in this group will normally join the service at school-leaving age. They will require some training on the jobs they are set to do, which can be given in part by those in direct charge of them, and in part by films. Films are expensive to make. Bad films are harmful and good films which to-day should have their own sound track, need professional skill to produce them; but once made, they can be cheaply duplicated and—once projectors have been purchased—cheaply shown. There is scope here for financial and technical co-operation between all kinds of businesses which have problems in common. For example, large firms often have extensive private sidings on which they do their own shunting. A good film on, say, shunting technique would be of use and interest to many people outside railway companies. Another and even better example is motor driving, where the range of interest would be enormous.

This group will also need opportunities for education. This might be half-time education for, say, two years, at classes provided by education authorities with a wide choice of subjects, which should not be too narrowly technical. Those who qualify by record and examination should be able to pass into the clerical or supervisory group.

(2) The Clerical Group

These would be recruited both from Group (1) (Operative) and from secondary schools. Current experience gained at the

type of clerical training centre pioneered by the L.N.E.R. is proving the value for recruits to the clerical staff of a short intensive residential course of training. These courses can turn these recruits in four weeks into fairly competent station clerks. To achieve this in so short a time, the training establishment must be residential. This training can be supplemented but not replaced by lecture courses in the larger centres, and by films which can be sent with projectors and operator-instructors up and down the line.

Educational opportunities can be offered by co-operation with local education authorities and by encouraging societies such as the Graduate and Student Societies of the Institute of Transport. Travel is also worth encouraging, particularly travel abroad during holidays. This would involve modifying existing pass regulations, but would be an inexpensive method of widening education.

Clerical staff should be eligible for promotion into any of the remaining three groups, (3) Supervisory, (4) Technical and (5) Administrative; the qualifications required would be least for (3) and most exacting for (5). Selection for this last would be followed by special apprenticeship courses covering the work of more than one Department. Examinations—including Institute of Transport exams—should be supplemented as tests by selection based on interview and records.

(3) The Supervisory Group

These would be selected from Groups (1) and (2) and should be eligible in exceptional cases from promotion into Group (5) (Administrative). Training here would be by films and lectures, education by discussions and travel.

(4) The Technical Group

This would be mainly recruited from secondary schools and from universities. Those who come from schools would need opportunities for part time education at technical colleges and institutes. Those entering from universities would be able to do practical work during vacations. Some might be recruited from Group (2) (Clerical). There would be no premium apprenticeship—to limit recruiting to those whose parents can afford the fees.

Men and women in this group would be encouraged to sit for the examinations of the various professional institutes. Educational opportunities would include travel, lectures, and discussions, but would be left largely to individuals. Members of this group should be eligible for appointment to administrative positions.

(5) The Administrative Group

This, the last group, is the smallest and the most important. A proportion of the recruits to it will come from Groups (2), (3), and (4), but in addition it will probably be found wise to take some recruits direct from universities. These latter will need a thorough training in the details of practical railway work, which can be given by special apprenticeship courses; but if they are taken on, say, at the age of 22, they will have spent four more years in being educated than those who are recruited from secondary schools. Because education (as pointed out above) counts for so much in this Administrative Group, these recruits from universities will start with advantages in certain respects over those from other groups. They will be picked men who have not merely obtained good degrees, but have taken an active part in the general life of their college or university. Some of them will have made their own way to the university by scholarship or bursaries, and they will all know how to think clearly and work systematically. On the other hand, they will normally lack the detailed

grounding in the elements of railway business which will have been gained by those who enter the service straight from school.

The needs of the Administrative Group are therefore dual, mainly training for those who have had a full university education, and mainly education for those who graduate into this group from Groups (2), (3), and (4). It seems doubtful whether both these needs can be met by any single type of apprenticeship course, and we may well see in the future two types of course, emphasising respectively training and education. Both types should include the associate membership examination of the Institute of Transport as a test which must be satisfied.

So far, we have dealt mainly with recruits. But because education is a continuing process, all members of Groups (3), (4), and (5) should probably be encouraged

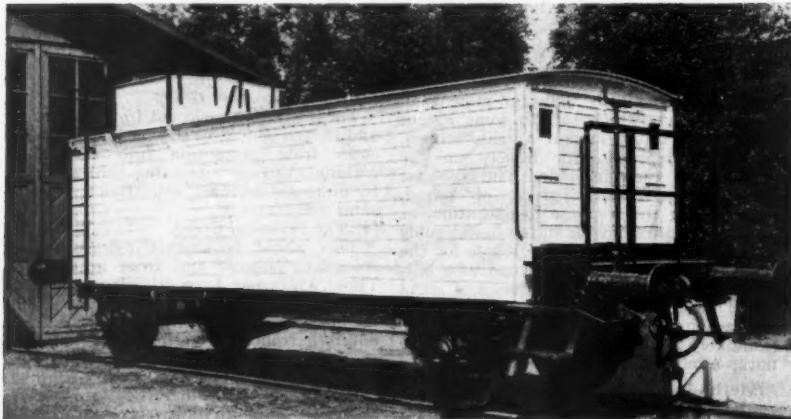
to take at intervals of a few years, short residential refresher courses. A staff college to give courses of this kind was being developed by the L.M.S.R. before this war. The residential aspect is important here, for such courses will bring together those holding responsible positions in various departments and will help to break down the tendency towards a somewhat watertight departmentalism which is always liable to recur unless steps are taken to check it. In addition to such courses, films, lectures, discussions, study groups, and travel are all means of keeping trained personnel abreast of new developments, and of reminding them that education is a continuing process.

To some this article may seem idealistic. Yet there are difficult times ahead for railways. In the years to come there will be complicated negotiations with the

Government and with companies engaged in other forms of transport. It is therefore important that the railways should vitalise their methods of recruitment and training. Promotion by merit will never produce by itself resourceful managers or skilful negotiators. It needs to be supplemented by an organisation that will begin by giving to every member of the staff the training and education that will help each to make the most of his abilities, whatever these may be. From the response to the opportunities given, it will be possible to single out the talented members of the staff in all grades and to give them the additional specialised training and education that they need to give their talents full scope. In short, this article suggests that the aim of railway managements in their future policy should be to make the best possible use of all the human material they employ.

All-Welded Railway Tank Wagons

Much steel is saved by the employment of a method of construction recently adopted in Sweden



Tank wagons are used by railways and shippers for the transport of an increasing variety of liquids, of which the most common are petroleum and different oils. Hitherto a tank wagon has generally consisted of a tank or cistern resting in cradles on an ordinary freight wagon or goods van truck. Some time ago the Swedish firm of A/B Chr. Olsson, with shops in the Värtan district of Stockholm, commenced building all-welded tank wagons differing considerably in design and construction from the usual type. These new tank wagons are considered to be a great improvement on earlier types, and the following is a description of their construction and principal advantages.

Many tank wagons built in recent years have had a welded tank, but in the Olsson wagon practically the whole structure is welded. It has no separate underframe in the usual sense of this term, but instead, at each end, a fixed two-wheel frame welded to the tank, and consisting of bearing forks, buffer beam, draw box, and cross bars. These end parts carry buffers, draw gear, spring suspension, brake mechanism, and so forth. The tank for two-axle wagons has a capacity of from 15 to 28 cu. m. (3,340 to 6,160 gal.) and the corresponding diameters are 1,800 to 2,400 mm. (5 ft. 11 in. to 7 ft. 10½ in.) respectively. The thickness of plate is 8 mm. (0.324 in.) in the body and 10 mm. (0.392 in.) in the ends. The tank is strong enough by itself

to support the load, and also to withstand all drawgear and buffer forces.

For reinforcement the tank is braced on the inside, more especially to resist buffer forces. It is made from all-welded steel plate with a tensile strength of 37 kg. per sq. mm. (23.5 tons per sq. in.) and is hydraulically tested for a pressure of 2 kg. per sq. cm. (28.4 lb. per sq. in.). The wagons have a wheel-base of 5 to 5.8 m. (16 ft. 5 in. to 19 ft. 4 in.) and a length overall of 9 to 9.8 m. (29 ft. 6 in. to 32 ft. 2 in.).

Instead of having a through drawbar, the wagon is provided with a powerfully made drawbar at each end. For wagons intended to be used on Swedish railways, standard goods-wagon draw-hooks are used, and the draw force is transmitted to the buffer beams by two standard vulute buffer springs against each beam. The entire draw-gear is easily accessible from above. The buffers are of a standard type. The wagons are at present being fitted with SKF roller bearings, and axles of the standard Swedish State Railways pattern. The supporting springs and suspension details are also of standard SSR type as used in goods wagons.

Each wagon is provided with a hand screw-brake, acting on all the wheels with double brake shoes. The hand brake is operated by a crank wheel from a platform at one end of the wagon. Some of the wagons are provided also with an air

brake, operating on the Hildebrand-Knorr (Hik.) system (goods) with brake-gear changer and slack adjuster. The brake cylinder and air container are suspended in brackets, welded direct on the tank. Compared with tank wagons of the usual type, the Olsson tank wagons account for a saving in weight of about 2 tons.

Plans have been prepared by the firm for building 4-axle wagons with swivel bogies in addition to the 2-axle wagons described here. The same firm also builds tank wagons for special purposes, and six are now under construction for the transport of chlorine. On account of the poisonous character of the chlorine gas, it is necessary to equip these wagons with certain safety provisions. The tank is all-welded from boiler plate which has a tensile strength of 42.50 kg. per sq. mm. (26.5-31.7 tons per sq. in.), a yield point 25 kg. per sq. mm. (15.8 tons per sq. in.) and which gives an elongation on a 200 mm. (7.87 in.) test length of 22-20 per cent. The tank is made for a working pressure of 15 kg. per sq. cm. (213 lb. per sq. in.) and is tested hydraulically to 30 kg. per sq. cm. (426 lb. per sq. in.). The barrel is of 16 mm. (0.63 in.) plate, and the well-rounded ends are of 18 mm. (0.71 in.) plate. The outside diameter of the tank is 1,600 mm. (5 ft. 3 in.). The tanks are being made by the Degerfors Steel Works, and will have the welded joints examined by X-rays, and annealed for stress equalisation after the welding. Here the tank is bolted to an all-welded underframe made to absorb the draw and buffer forces, and designed to protect the tank itself as much as possible against exceptional strains, even those arising from collision and derailment.

To protect the tank from the effect of the sun's heat, which would raise the pressure of the chlorine gas to a dangerous point, the tank is enclosed by a steel superstructure of angle bars, which, in turn, is covered by removable wood sections. The roof is also removable, and is covered by deals and weather-proofed board. At the ends of the box are openings for ventilation. The steel skeleton, being constructed as a framework, constitutes a very strong vertical reinforcement of the longitudinal beams of the truck. These are also braced transversely by cross bars, which serve the further purpose of supporting the brake fittings.

This chlorine tank wagon has a wheel base of 5.5 m. (18 ft.) and is fitted with SKF roller bearings, axles, and springs of standard Swedish State Railways type.

engaged therefore to vitalise training. Produce by careful negotiation by giving training to make over these opportunities to single staff in additional on that all scope. the aim for future possible employ.

and-Knorr brake-gear. The brake is suspended from the tank. The usual account of about

1 by the tons with the 2-axle the same for special under chlorine. The character necessary to gain safety all-welded has a tensile strength of 50,000 sq. mm. per sq. in., a yield point of 5.8 tons per sq. in. (elongation 20 per cent.) test. The tank has a pressure of 150 lb per sq. in. (10 kg. per sq. cm.). The tank is made of 18 mm. plate, 16 mm. outside diameter. (5 ft. 10 in.) made by and will be secured by equalisation. The tank is made to resist forces, and as much as possible, even in the event of a derailment.

Effect of the pressure at this point, the superstructure, is as follows. The tank is covered in a hard. At the top for venting containing a very large longitudinal. There are also two doors, which support the tank.

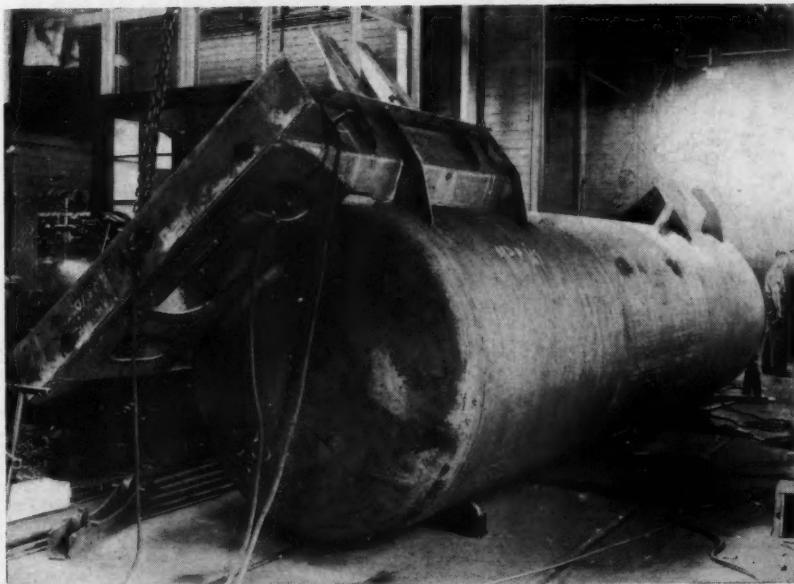
a wheel fitted with coil springs of type.

Right: All-welded tank wagon of Swedish light-weight design with a tank capacity of 28 cu. m.



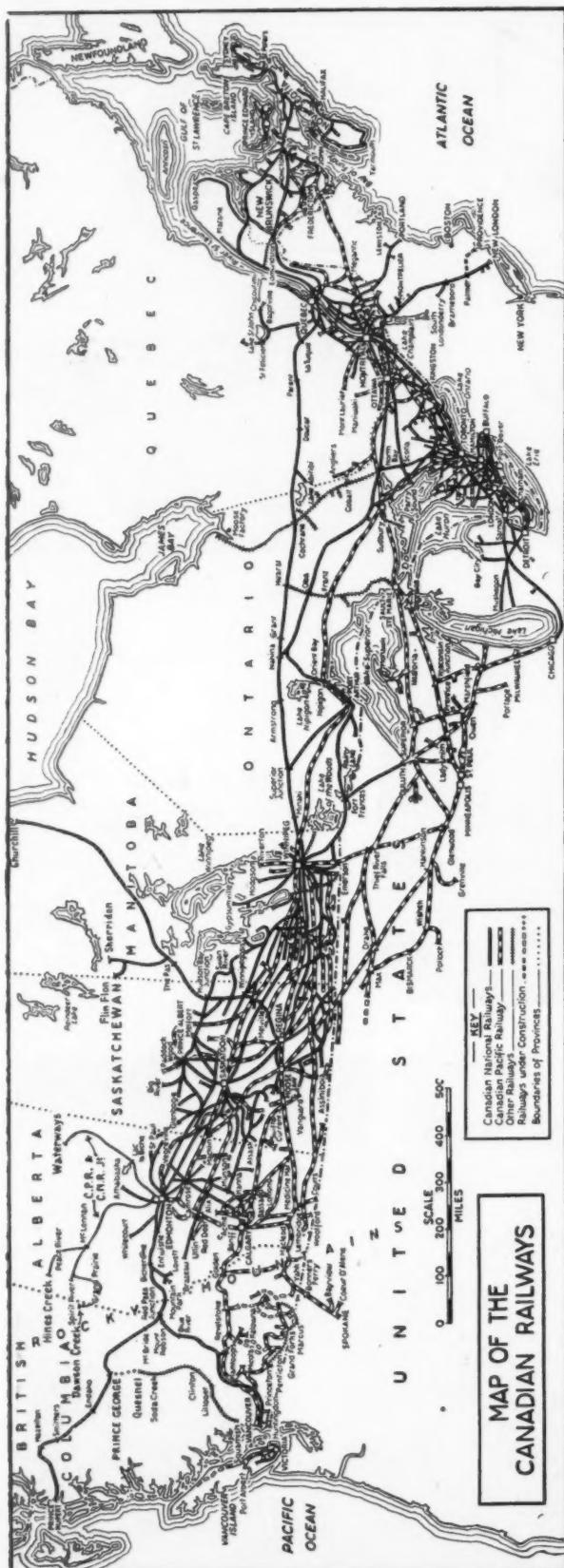
Left: Main structure of an all-welded chlorine tank wagon built for use in Sweden

Right: All-welded tank wagon showing method of construction



ALL-WELDED RAILWAY TANK WAGONS

(See article on opposite page)



Canadian Pacific Railway Development under Sir Edward Beatty

CONSIDERABLE developments have taken place on the Canadian Pacific Railway since 1918, the year in which Sir Edward Beatty became President of the company, which was faced at the time with Government-subsidised transport competition and a period of depression accentuated by the war. In that year the mileage of the C.P.R. (including lines leased and worked) was 13,768; today its grand total is 21,055 miles comprising 17,208 miles proper, and 3,813 miles of separately-operated subsidiaries in Canada and the United States. For 1918 the gross earnings of the company amounted to \$157,537,698; for 1942 they were \$256,864,091. The motive power of the C.P.R. today consists of 1,668 locomotives, and the company's rolling stock includes 3,897 passenger and luggage vehicles, and 78,790 goods wagons.

Sir Edward Beatty, who became Chairman as well as President in 1924, continued, in spite of severe competition, to develop the C.P.R., not only in the railway sphere, but also in the fields of sea and air transport, and by increasing tourist-traffic facilities. His leadership of the privately-owned system under the rivalry of Government-controlled lines contributed to an appreciation of the C.P.R. being recorded in the report of the Royal Commission of 1932, which described that company as having "brought faith, courage, and invincible energy to the task of building its lines through the undeveloped west," and stated that "the company's achievement commanded the admiration of both railway operators and the public, and had been a material factor in causing Canada to be known favourably on three continents. Its operation brought profit to shareholders, and the enterprise became a national asset of acknowledged value and importance to the Dominion." During his term of office great strides were made in locomotive development, and the reorganisation of the Angus Locomotive Works at Montreal and of the Strathcona shops at Calgary resulted in their being able to play a particularly useful part in war production when the time came.

The steamship services of the Canadian Pacific were developed by Sir Edward Beatty to fill their present position of world-wide fame and importance. Additions to the company's fleet between 1920 and 1930 involved an investment of some \$95 million, a quarter of the expenditure on the whole system during that period, and nearly four times as much as the original capital of the company. Ships which were built during Sir Edward Beatty's term of office included the well-known *Empress of Britain*, of 42,500 tons, and *Empress of Scotland*, of 33,000 tons, and the vessels of the "Duchess" class. In 1927, the Canadian Pacific carried more passengers from Europe to North America than any other line. Sir Edward Beatty took special pride in the introduction of the five 10,000-ton "Beaver" ships, which operated a fast-freight service, virtually on a "railway schedule," between London and, in the summer, Montreal, and, in the winter, St. John. The C.P.R. is by far the greatest ocean steamship-owning railway in the world. It operates both trans-Atlantic and trans-Pacific services.

The development of air transport in recent years by the C.P.R. has been on a considerable scale. As the result of purchases of air lines during 1941-42 the company now ranks as one of the largest commercial air-line operators. The air services associated with the C.P.R. include practically all the air-transport companies west of the Maritimes to the Pacific coast, and north of a line Winnipeg-Vancouver to the Arctic. More than 100 aircraft are operated, and over 1,000 flying and ground personnel are employed; the yearly flying mileage is about 5 million. One of the principal changes in air services made since the C.P.R. took over control has been the establishment of United Air Services for the joint operation of Canadian Airways and Mackenzie Air Services from Edmonton almost to the northernmost limits of Canada. Immediately it secured control of these companies, the C.P.R. planned to eliminate uneconomic and duplicate services, to stabilise the rate structure, and generally to place the industry on a sound financial basis.

Among facilities for the encouragement of passenger and tourist traffic, Sir Edward Beatty developed the air-conditioning of passenger coaches, instituted the individual-compartment type of sleeping car for service between Toronto and Montreal, and extended his company's hotel accommodation. The Royal York Hotel at Toronto was opened in 1929, and, among other improvements, the Château Frontenac at Quebec was rebuilt between 1923 and 1927, and the Banff Springs Hotel between 1926 and 1928. The development by Sir Edward Beatty of sea cruises, in addition to showing a small profit, was a material factor in eliminating uneconomic loss of time on the part of ships which otherwise would not have been in use during certain seasons.

RAILWAY NEWS SECTION

PERSONAL

Sir Harold Hartley, Vice-President, L.M.S.R., has been appointed a member of the committee constituted by the Chancellor of the Exchequer to examine the training of civil servants.

Sir Walter Benton Jones, Bt. (Chairman & Managing Director, United Steel Cos. Ltd.), Mr. A. C. Macdiarmid (Chairman, Stewarts and Lloyds Limited), Mr. G. S. McLay (a Director of Stewarts and Lloyds Limited), and Mr. J. E. James (Chairman & Managing Director, Lancashire Steel Corporation Limited) have joined the board of the Wellman Smith Owen Engineering Corporation Limited.

We regret to record the death on March 21, at the age of 87, of Sir John Fox, who was a Director of the King's Lynn Docks & Railway Company.

Mr. N. L. Goodchild, Director for Pig Iron, Iron & Steel Control, has been appointed also Director for Electrodes. Mr. Goodchild joined the control from the Stanton Iron Works Co. Ltd.

We regret to record the death on March 22 of Mr. G. T. Hedge, O.B.E., who was Outdoor Commercial Manager, Southern Railway, from 1923 until his retirement in 1930.

L.M.S.R. APPOINTMENT

Mr. H. J. Comber, General Assistant to the Chief Officer for Labour & Establishment, L.M.S.R., has been appointed Chief Officer for Labour & Establishment, in succession to Mr. G. L. Derbyshire, who recently was appointed a Vice-President of the company.

We regret to record the death on March 15, at the age of 58, of Mr. L. E. F. Baenziger, Secretary of the Skefko Ball Bearing Co. Ltd.

The Hon. Clive Pearson, Chairman, Mr. I. C. Geddes, Deputy-Chairman, the Hon. W. L. Runciman, Director-General, and Harold Brown, Director, British Overseas Air-seas Airways Corporation, have resigned from the board of the corporation. Mr. Clive Pearson is a Director of the Southern Railway Company; and Mr. Harold Brown is a Director of Lloyds Bank Limited. The Secretary of State for Air announced on March 24 the names of the new Directors of the British Overseas Airways Corporation as follows: Sir Harold Howitt, a member of the Air Council and of the Air Supply Board (Chairman); Mr. John Marchbank, who retired recently from the General Secretaryship of the National Union of Railwaymen; and Mr. Simon Marks, Chairman of Marks & Spencer Limited. Mr. Gerald d'Erlanger retains his seat on the board.

The British Overseas Airways Corporation was incorporated by the British Overseas Airways Act, 1939. On April 1, 1940, the corporation acquired the undertakings of British Airways Limited and Imperial Airways Limited.

Sir Edward Beatty, G.B.E., K.C., LL.D., Chairman of the Canadian Pacific Railway Company, whose death in Montreal on March 24 was recorded briefly in our last week's issue, had held that position since 1924; he was President also from 1918 until 1942. Edward Wentworth Beatty was born in October, 1877, and joined the staff of the Canadian Pacific Railway in 1901 as an Assistant in the Law Department. He was appointed Assistant Solicitor in

memorial service for Sir Edward Beatty was held on March 30 at St. Martin-in-the-Fields Church, Trafalgar Square. (See article on opposite page and editorial article on page 351).

Brigadier G. S. Harvie Watt, who is 39, has been appointed a Director of the Great Western Railway Company, following the retirement of Sir Watkin Williams-Wynn. Brigadier Watt is Conservative Member for

Richmond, Surrey, and is Parliamentary Private Secretary to the Prime Minister. From 1931-35 he was M.P. for Keighley, and has been Parliamentary Secretary to the President of the Board of Trade, and Assistant Government Whip. He is a Director of Australian Commonwealth Carbide Co. Ltd., Globe & Phoenix Gold Mining Co. Ltd., Phoenix Mining & Finance Limited, and Phoenix Prince Gold Mining Co. Ltd.

L.N.E.R. APPOINTMENTS

Mr. A. K. Terris, District Engineer, Leeds, to be District Engineer, Glasgow.

Mr. W. H. Mortlock, Chief Staff Clerk, Chief Accountant's Department, Hadley Wood, to be Hotels Accountant.

Mr. E. M. Hall, Assistant Locomotive Accountant, Stratford, to be Assistant Locomotive Accountant, Doncaster.

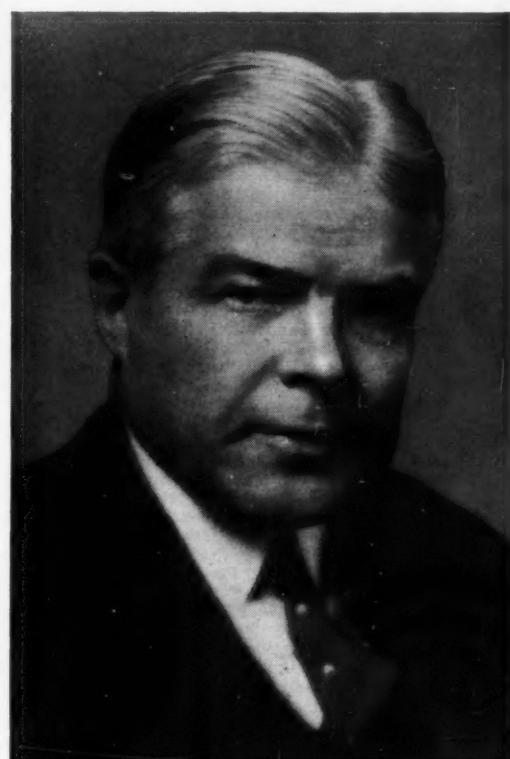
Mr. F. C. Margetts, Head of Freight Trains Section, Superintendent's & Locomotive Running Superintendent's Offices, York, to be Trains Assistant to Superintendent, Southern Area.

Mr. J. D. Horgan, Dock Superintendent, St. Andrew's Dock, Hull, to be Acting District Goods & Dock Manager, West Hartlepool.

Mr. H. Hall, in addition to his functions as Engineer's Accountant, Southern Area, to be Engineer's Accountant for the whole line.

Mr. H. W. Few, Assistant District Superintendent, Kings Cross, to be Acting Assistant to Superintendent (Eastern Section), Southern Area.

Mr. William Clower, O.B.E., whose death we recorded last week, was Chief Officer for Labour & Establishment, L.M.S.R., from 1927 until his retirement in 1929. From the inception of railway conciliation boards in 1907, he had been concerned closely with negotiations on behalf of the railway companies with the trade unions and other organisations; he became Chairman of the Negotiating Sub-Committee of General Managers in 1920, and was Chairman of the Negotiating Sub-Committee of the Staff & Labour Committee from 1921 until 1923, when the Railways Staff Conference was constituted. He was Chairman of the latter body up to the time of his retirement, and also, from the inception of those bodies, of the National Railway Shopmen's Council, the National Railway Electrical Council, and of the Railway Police Central Conference. He was Chairman of the Central Wages Board from its inception in 1920 until 1929, and acted as the railway companies' advocate at numerous hearings before the Statutory National Wages Board. He was appointed a member of the National Wages Board in 1926. He entered the service of the former Midland Railway in the Goods Manager's



The late Sir Edward W. Beatty

President, Canadian Pacific Railway, 1918-42
Chairman, Canadian Pacific Railway Company, 1924-43

Mr. 1905; five years later he became General Solicitor; and in 1913 he was appointed General Counsel. He rose rapidly and, on the retirement of Lord Shaughnessy, in 1918, Mr. Beatty was elected President of the company. On the death of Lord Shaughnessy in 1924 Mr. Beatty succeeded him as Chairman & President. He became Chairman of Canadian Pacific Steamships Limited in 1925, and was knighted in July, 1935. Towards the end of 1939, Sir Edward was appointed Controller of Shipping for Canada, to work in conjunction with the British Ministry of Shipping, which position he held until September, 1941. It then was found necessary to create a board of directors, able to give full-time attention to war-transport problems, because of the vast expansion of shipping planned for the future. Sir Edward was associated with some 34 transport concerns and with a number of important commercial enterprises in the Dominion; and he was well known for his diverse educational and philanthropic interests. A



The late Mr. William Clover

Chief Officer for Labour & Establishment,
L.M.S.R., 1927-29

Office in January, 1880, and in May of the same year was transferred to the General Manager's Office. He was appointed Indoor Assistant to the General Manager in 1915, and Principal Assistant to the General Manager in 1919; he was promoted to the position of Assistant General Manager in 1920. On January 1, 1923, he was appointed Assistant to the General Manager (Staff & Labour), L.M.S.R., and he became Chief Officer for Labour & Establishment on January 1, 1927.

Mr. G. F. Sampson, Traffic Manager, Central Argentine Railway, who, as recorded in our March 12 issue, has retired, was born in Liverpool on April 24, 1878, the third son of the late Mr. Ralph Sampson, formerly Stationmaster at Castle Station, Northampton, and afterwards at Buxton. Mr. Sampson commenced his railway career on the former L.N.W.R., and served at

Blisworth, Bletchley, and Northampton, obtaining good all-round knowledge of passenger, goods, and district-office work. In 1902 he joined the Traffic Department of the Central Argentine Railway, and served at Villa Maria (as Traffic Inspector), Rosario (as Stationmaster), and Ceres, where he became Sectional Traffic Superintendent in 1908. A year later he was transferred to Buenos Aires as Assistant Chief of Movement, and in 1911, at the age of 33, he was appointed Divisional Traffic Superintendent at Buenos Aires. He acted as Assistant Traffic Manager from February, 1916, until June, 1919, when he was transferred to Rosario as Divisional Superintendent, retaining this position until January, 1922, when he returned to Buenos Aires as Assistant Traffic Manager. In July, 1926, Mr. Sampson was appointed Traffic Manager in succession to Mr. Ronald Leslie, when the latter was appointed General Manager.

We regret to record the death, at the age of 83, of Mr. T. Keeling, who was Engineer-in-Chief of the Glasgow & South Western Railway from 1916 to 1923.

Mr. John Murray, O.B.E., who was Assistant Chief General Superintendent, L.M.S.R., from 1927 until his retirement in 1932, has been appointed by the King-in-Council to be Sheriff of the County of Brecon for 1943. Mr. Murray commenced his railway career as a junior clerk in the Superintendent's Department of the former Midland Railway at Brecon, and, after obtaining experience at several stations, was promoted Stationmaster in 1893, and District Traffic Inspector for South Wales in 1899. He was appointed Assistant to the District Superintendent at Bristol in 1906, and in the next year was called to headquarters at Derby, where he was engaged under Sir Cecil Paget in the establishment of the control system of train working on the Midland Railway. He was appointed Superintendent of Freight Trains in 1911, which position he held until 1923, when he became Assistant General Superintendent (Midland Division), L.M.S.R. In 1924, he was made Outdoor Assistant to the Chief General Superintendent, and in 1927 became Assistant Chief General Superintendent. He was appointed an Officer of the Order of the British Empire in 1920 for his services in connection with transport during the war of 1914-19. He represented his company on the National Wages Board from 1927 to 1932. Mr. Murray's family has been associated with railways from an early date. His great-grandfather, Mr. Alexander Sutherland, was a contractor for the construction of the Gloucester & Dean Forest Railway (authorised in 1846); and his grandfather, a second Alexander Sutherland, received his training as an engineer under I. K. Brunel, and carried out a number of important contracts in South Wales, including the construction of the Ponsticill Junction & Merthyr Section of the Brecon & Merthyr Railway. His father, Mr. Alexander Murray, carried out construction work on the Highland and Caledonian Railways and later served the Midland Railway from 1877 until his retirement in 1909. Mr. John Murray's son, Mr. Donald Murray, is in the service of the L.N.E.R., and was appointed recently to act as Assistant Goods & Passenger Manager, York, for the North-Eastern Area of that company.

We regret to record the death on March 18 of Mr. H. J. O'Neill, Chairman of the Southern Railway Servants Orphanage at Woking.



Mr. John Murray

Assistant Chief General Superintendent,
L.M.S.R., 1927-32; appointed Sheriff of Brecon

Mr. Percy Goddard, Assistant Traffic Manager, Central Argentine Railway, who, as recorded in our March 12 issue, has been appointed Traffic Manager as from February 1, commenced his railway career in 1899 on the then Midland Railway (England) at Ecclesfield, but two years later he went to South Africa and joined the Cape Government Railways. He resigned in 1904 to join the cartage-contracting firm of Guthrie & Company, serving first in the head office at Port Elizabeth, and subsequently as branch manager at Colesberg. In 1907 he entered the service of the Central Argentine Railway, and, after occupying various responsible posts at Galvez, Ceres, Victoria, and La Banda, he was appointed Divisional Traffic Superintendent at Retiro Terminus, Buenos Aires, in 1922. In 1924 he became Chief Traffic Controller, and in 1926 was made Assistant Traffic Manager, with headquarters at Rosario, which post he now relinquishes on his new appointment.



Mr. G. F. Sampson

Traffic Manager, Central Argentine Railway,
1926-43



Mr. Percy Goddard

Appointed Traffic Manager,
Central Argentine Railway

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TRANSPORT SERVICES AND THE WAR—184

Train Heating

The heating of passenger trains was suspended on April 1, excepting for long-distance night trains, which will continue to be heated until May 4. Last year the ordinary train heating ceased on April 12.

Cheap Travel for War Workers

The scheme of cheap travel for war workers transferred to areas away from their homes is to be resumed this summer, but will not be available at Easter, Whitsun, or August Bank Holiday. The arrangements provide for the issue of two warrants each entitling the worker to a return railway ticket at a cost of 7s. 6d. in cases where the fare would exceed that amount. The scheme will be in general operation from April to September inclusive, but agricultural workers may use it all the year round.

Special Trains for Military Exercises

Throughout the recent large-scale military exercises between "enemy" and "home" forces, the railways ran 430 additional trains in a period of ten days. The whole operation was carried out without a hitch, and without dislocation to ordinary services, which in the words of a War Office authority "reflected the greatest credit on all the railway companies." A special timing office was staffed by operators drawn from all the railways. The work of this office was to superimpose the additional moves upon the troop specials, and ordinary goods and passenger trains already scheduled.

Travel to Ireland

Rail and steamer tickets to and from Ireland will not be issued between the following dates unless the passenger is in possession of a sailing ticket:—

From Great Britain to Ireland

Between April 8 and May 1, both dates inclusive.

From Ireland to Great Britain

Between April 26 and May 15, both dates inclusive.

Application for sailing tickets (issued free of charge) should be made at least ten days before the date of the proposed journey, and must state the proposed date of travel together with an alternative date. Passengers to Ireland must also be in possession of the necessary exit permit.

Race Transport

Transport arrangements for race-horses will be the same during the coming season as they were last year. Race-horses will not be allowed to travel by rail except for the classic races and the other open races at Newmarket. Transport by road will be limited to 50 miles. Thus, Epsom-trained horses running at Salisbury will have to complete their journeys by walking. There will be no additional trains for passengers on race-days. Reference to the Transport of Horses Direction, made by the Minister of War Transport, which came into force on January 22, 1942, appeared in our issue of February 27, 1942.

First Haulage Pool

A private company called the First Haulage Pool Limited was registered on March 11, with a capital of £1,000, to provide facilities for the removal from places in the London Area of contraband and other cargoes whose consignees or owners cannot be ascertained immediately, or cannot immediately accept delivery. The company is to assist or collaborate with Government Departments, etc. The first directors are Messrs. Albert E. Doe;

James A. Palmer, Director, W. J. Cumbers Limited; Walter Piper, Director, East Ham Haulage Co. Ltd.; Jack W. Hill, Director, Globe Haulage Co. (Brentford) Ltd.; Harry Stevens, Director, Harry Stevens (Contractors) Limited; George E. Overall, Director, Transport Union Limited; and George A. Duff, Director, Duff & Sons Ltd. The registered office is 34, Victoria Street, Westminster, S.W.1.

Women Travelling Porters

A parcels "flying squad" of girls has been established by the G.W.R., and these women travelling porters are stationed at Paddington, Bath, Birkenhead, Birmingham, Bristol, Cardiff, Carmarthen, Chester, Didcot, Exeter, Hereford, Newport (Mon.), Newton Abbot, Oxford, Pembroke, Plymouth, Shrewsbury, Swansea, Swindon, Taunton, Trowbridge, Westbury (Wilts.), Weymouth, Whitland, Wolverhampton, and Worcester. Every day their duties take them over wide areas, often covering several counties and involving some 250 miles of train travel. Their special duty is to see that every package loaded at the starting station and everywhere else *en route* goes into the right van on the right train, in the exact spot in that van to suit the destination, so that the pile of parcels for each place lies handy by the most convenient door ready to be unloaded the moment the train stops. They form part of the company's intensified campaign to combat the combined difficulties created by wartime traffic volume and wartime staff shortage, and to avert delays, damage, and losses due to over-carrying, short-carrying, missed connections, mis-transfers, and hurried handling. Each girl first directs the loading of traffic at her home station. She then travels in the guard's van, and works in turn for each of the twenty or thirty stationmasters at whose platforms the train may stop. Moreover, all the time the train is running between stations she passes from van to van through the con-

necting gangways, adjusting the stowage of the load. Already the timekeeping of over 300 of the busiest regular trains has been improved by the "flying squad."

More Red Buses in London

The shortage of the well-known red paint of the London Transport bus fleet has been overcome, temporarily at any rate. When painting becomes necessary, the familiar bright red will again be used, instead of the recent Indian-red (brown) colour now in use on many vehicles. Our previous reference to the matter was in our February 19 issue, page 195.

"For Merit"—London Transport

A small brass plate mounted on oak has been fixed between two of the lifts at the London Transport headquarters at Broadway Westminster. This reads:—

IN THE HOUR OF PERIL THE MEN AND WOMEN OF THE LONDON PASSENGER TRANSPORT BOARD EARNED THE GRATITUDE OF THE BRITISH NATION SUSTAINING THE VALOUR OF THE ROYAL AIR FORCE AND FORTIFYING THE CAUSE OF FREEDOM BY THE GIFT OF SPITFIRE AIRCRAFT

"They shall mount up with wings as eagles" Issued by the Ministry of Aircraft Production, 1942

This plate has been presented by the Ministry of Aircraft Production to London Transport as a mark of appreciation to the administrative staff who subscribed £5,000 for a Spitfire. The sum was raised by small weekly donations; the fund is well on the way towards purchasing another Spitfire.

American Army Transport

In a recent survey of the assistance which Great Britain is giving to the U.S.A. under Reciprocal Aid (the converse of American Lend-Lease), it was stated that all rail transport, both passenger and freight, required by the U.S.A. Army in Great Britain is paid for by the British authorities, at a monthly cost of \$1,500,000. British Army engineers have laid more than 100 miles of track at U.S. Army railheads, and have constructed other railway facilities. The U.S.A. Army is using more than 3,000 British buses and passenger cars,



Since the N.A.A.F.I. began its buffet-car service on long-distance leave trains, nearly four million snack meals have been served on trains to members of the Forces. This view shows the snack bar on an L.M.S.R. train

many of which were requisitioned from their owners.

Summertime in Palestine

Summertime was again introduced in Palestine on March 31, when clocks were advanced one hour, making them three hours ahead of Greenwich Mean Time.

American Ambulance Trains in England

To meet the additional requirements of the American Army in the European Theatre of Operations, based in Great Britain, the Medical Department of the U.S. Army is having a number of ambulance trains equipped in Great Britain in the shops of the main-line railway companies. The Americans are to have their own crews and staff working in their own trains, but the vehicles are being converted and arranged by British workmen in British workshops to the designs of an Anglo-American Committee. As with the British ambulance trains described and illustrated in our columns in the early days of the war (notably in illustrated articles published in our issue of November 10, 1939, page 608, and December 8, 1939, page 735), existing passenger vehicles have been stripped and re-arranged as ward cars, and so forth. The first of these trains was handed over on March 25 by Mr. F. W. Haworth, Chief Mechanical Engineer, G.W.R., to Brigadier-General P. R. Hawley, Chief Surgeon of the U.S. Forces in Great Britain.

Timber for Post-War Transport

At a recent meeting of the Allied Technical Advisory Committee on Inland Transport, the post-war supply of timber for all means of transport was examined, at the request of the Timber Sub-committee of the Allied Requirements Bureau. Essential requirements were considered of such items as railway sleepers, telegraph poles, trestles for temporary rail and road bridges, timber for wharves, storage sheds for relief goods, and the repair of goods wagons and road motor lorries. So much timber has been taken by the Germans from those occupied territories which in pre-war years supplied their own needs, and in some cases even supplied other European countries, that there may be considerable difficulty in securing adequate supplies unless careful advance planning of both the supplies and their transport is prepared.

It was reported to the meeting that the maintenance of railway sleepers had deteriorated generally throughout occupied Europe, although less on the main supply trunk lines, which have been cared for by the Germans at the expense of secondary lines. In a number of cases sidings, and one of the two tracks on double-track lines, have been removed, to the detriment of internal transport in the particular countries. It is well recognised that if renewals fall below a minimum standard, track conditions deteriorate with increasing rapidity. The first consideration will be to stop further deterioration below the level found at the end of the war.

Some Continental railways use hardwood timber for sleepers and others soft-wood, treated in some cases only. Some administrations use soleplates, while others spike the rails direct to the sleepers. There are also considerable variations in the dimensions of sleepers in different parts of the Continent. To meet these varied requirements, a kind of "austerity" track is being evolved, so as to secure the benefits of standardisation in the use of available shipping space. Many systems may have to accept this "austerity" standard for the time being, and change over to a heavier standard at a later date.

In planning provision for current repairs to wooden railway wagons which will be needed urgently for relief traffic, the corresponding repair to road motor lorries was treated by the committee as an inter-linked requirement.

Japanese "Austerity" Engines

The Japanese Minister of Railways announced recently that locomotive building was being standardised and simplified. Goods traffic would be given even greater preference over passenger traffic than in the past.

The Western Desert Railway

A Reuters message from Cairo, dated March 23, says that the Egyptian State Railways have now resumed the working of the coastal railway which crosses what was once the Western Desert battlefield. The Bedouin population is returning to the coastal villages. It is not known how far the public service now extends. The peacetime railhead was at Mersa Matrouh, but the Military authorities subsequently extended the line to Tobruk, as described in an illustrated article in our issue of February 5 last.

Producer-Gas in Europe

According to German reports, there are about 150,000 motor lorries now in service throughout Continental Europe under German domination, equipped with wood-gas generators. It would seem that the use of charcoal generators has been abandoned by the German authorities. Endeavours have been made to construct an all-purpose generator to use various kinds of solid fuel, but without success.

Producer-Gas in India

A recent estimate of the Indian Government stated that about 7,000 vehicles, principally motorbuses and lorries, have been converted from petrol to producer-gas operation during the past 18 months. Impetus to this trend has been given by restrictions on petrol consumption (already recorded in our columns) necessitated by the suspension of important sources of supply in Burma and in Netherlands Indies. Recently the demand for producer-gas equipment has increased so greatly that manufacturers have had difficulty in obtaining adequate supplies of steel. In consequence, the War Transport Department has taken steps to ensure delivery of steel and other essential raw materials to manufacturers of producer-gas equipment, in order to assist in the maintenance of essential transport service.

Also, the Central and provincial governments have taken steps to accelerate and regulate the output of charcoal, and to arrange for adequate stocks to be available at points of greatest demand. Experiments are being made in the use of coke instead of charcoal.

Transport Damage in Nuremberg

Periodically, the Air Ministry News Service gives some indication of the damage to transport objectives revealed by subsequent reconnaissance to large-scale raids. In the raid on Nuremberg on the night of March 8, the M.A.N. diesel engine works and the Siemens electrical works, factories in the southern districts of the city, were hit. In addition, a great deal of railway property was damaged, and fires in the railway yards were still burning when photographs were taken two days later. Nuremberg is a junction of considerable importance, as the meeting place of six main lines radiating to all parts of Germany, to Bohemia, and to Austria. The

Air Ministry reconnaissance photographs show that the main repair shop in the marshalling yard was severely hit, the roof of another repair shop damaged, and many smaller buildings on each side either destroyed or damaged. Four sheds near the main railway station were destroyed, and the railway administrative building gutted.

Gauge Conversion in Eastern Europe

Reference is made in the Reichsbahn report for 1942 to the large amount of reconstruction and gauge conversion (from the Russian 5 ft. to 4 ft. 8½ in.) undertaken on the occupied railways of eastern Europe. An intensive drive to convert Soviet wagons to standard gauge is said to have yielded good results. At Minsk, on the Warsaw-Moscow main line, a very large Soviet repair shop is stated to have been reconstructed, and to employ 3,500 men at present, mainly on the conversion of Soviet wagons.

Light Railways in Eastern Europe

With the participation of a substantial number of German firms specialising in the construction and equipment of industrial railways, a new company called the Feld- und Industriebahn Ost G.m.b.H. was established in Berlin on January 26, with an initial share capital of RM. 100,000. It is to allocate to its member firms works existing in the German-occupied Eastern Regions, and to establish light railway undertakings in those parts. Light railways are regarded as particularly important in the Eastern Regions (Poland and occupied Soviet territory) because of the comparative scarcity of main railways.

Standard German Wagons

Simplification in wartime wagon construction in Germany is said to have resulted in savings in materials (compared with normal times) of 25 per cent. with guards vans for goods trains; 38 per cent. for "Glhs" type goods wagons; 24 to 30 per cent. for "G" type wagons (with two or three axles, and a normal loading capacity of 15 metric tons); 29 per cent. for "O" type wagons; and 24 per cent. for "R" type wagons. "G" denotes a covered wagon; "O" an open wagon; "R" an open wagon with side wall fitted with stanchions; "h" steam piping; "l" a high-capacity wagon with a useful loading length of 18 metres (59 ft.); "s" wagons with interchangeable axles and wheels for standard (4 ft. 8½ in.) and Russian (5 ft.) gauges.

Italian Road Traffic

An Order, which came into force on January 16, prohibits motoring between towns, except when special authorisation has been obtained previously. This Order is stated to be the result of fuel shortage.

A decree of the Italian Ministry of Transport, issued on September 22 last, provides that single drivers may be permitted to handle trains of road vehicles consisting of a motor lorry and a single-axle trailer. The lorry is permitted maximum dimensions of 18 ft. length, and 5 ft. 10 in. width, and a total laden weight of 3 metric tons. The trailer is limited to 9 ft. 10 in. maximum length (inclusive of coupling gear), maximum width of 5 ft., and total laden weight of 1½ metric tons.

Road Tunnel Shelters in Genoa

Several of the road tunnels in Genoa, normally used for ordinary street traffic, are stated to be occupied as air-raid shelters during R.A.F. raids on the area.

Isle of Man Railway Company

The 73rd annual general meeting of the Isle of Man Railway Company was held in the company's offices on Wednesday, March 10, Mr. R. Q. Hampton, M.H.K., Chairman of the company, presided.

The Chairman, in the course of his speech, said that the Lieutenant-Governor had made a General Direction and Order under the provisions of the Defence (General) Regulations (Isle of Man), 1939, providing that the directors' report and accounts of the company might not be published, and the business, therefore, was confined to the declaration of dividends and the election of directors and auditors. Before proceeding with these items, he would like to express the thanks of the directors to the staff for their loyal co-operation, from the Manager, Mr. Sheard, and each of the departmental heads down through all ranks.

The directors recommended a dividend on the preference shares at 5 per cent. for the past year, and a dividend on the ordinary shares at 2½ per cent. for the past year, payable on March 17, which he felt sure that in these difficult times the shareholders would find satisfactory.

The resolutions declaring these dividends were, on the motion of the Chairman, duly seconded, and carried.

On motion duly seconded, the Chairman and Mr. R. C. Cain were re-elected directors.

On the motion of Mr. J. H. Skillicorn, seconded by Mr. T. H. Cowin, it was resolved that the directors' fees be increased from £425 to £525. The opinion was expressed that the results of the past year, in which the company had been brought back to a dividend-paying state, reflected great credit on the directors. These results were a great step-up from what the shareholders had experienced in the past few years.

The resolution for the re-election of Messrs. Turquand, Youngs, McAuliffe & Co. as auditors of the company for the coming year at a fee of 100 guineas was carried.

Votes of thanks were passed to the Chairman, directors, and staff, and the proceedings terminated.

Sharing Export Trade

Sir Samuel Turner, Chairman of Turner & Newall Limited, in an address on March 25 sponsored by the Industrial Co-partnership Association, explained a scheme for international sharing of export trade. The essential principles of the scheme were defined as (a) sharing of international trade in foodstuffs, raw materials, and key industrial products by agreement between exporting countries at stable prices arranged in consultation with the importing countries, and (b) every country should balance its exports and imports over agreed short periods. Industries which might be approached first were iron and steel, shipbuilding, building materials, and the locomotive industry. Each industry participating would have to act as an organic entity in negotiating with its opposite numbers in other producing countries. All engaged in it would be represented by an employers' federation. The terms of any agreement reached would be submitted for ratification to the governments concerned.

Sir Samuel said that, rather than endure unemployment—which between the two wars had cost Great Britain alone, directly and indirectly, something like

£3,000,000,000—industries should be encouraged to accumulate surpluses, though the nature of these would have to be determined. These surpluses would be absorbed by an organisation set up by the Governments and used on Lend-Lease (or other) principles to fertilise development in the Colonial Empire or in backward nations, such as China and India. Distribution might involve problems of some magnitude.

A policy of maximum production, pursued internationally, could not fail to bring about a rapid rise in the standards of living in backward areas, where at present more than half the world's population of two thousand millions was living probably on less, than the equivalent of £5 a head a year. To raise the standard of living in China alone by this amount would be to provide the equivalent of Great Britain's total export trade during the last four pre-war years.

To facilitate export and import transactions, a central world clearing bureau should be established. This body would agree on and maintain for periods the relative values of all currencies. In view of the conditions likely to prevail at the end of the war, he did not propose that a start should be made in applying the scheme until two clear years had elapsed.

Sir Harold Hartley, a Vice-President of the L.M.S.R., who presided, said it was opportune that the nation should have this scheme put before it at a moment when everyone was thinking of ways in which to realise greater world supplies and full employment, with an augmented standard of living. Though the scheme might not command a full measure of agreement, he hoped those present would pursue it and lend their support to broadening it.

CENTENARY OF RAILWAY TO COLCHESTER.—On March 29, 1843, the extension of the Eastern Counties Railway (one of the ancestors of the L.N.E.R.) from Chelmsford to Colchester was opened; the original opening date had been fixed for February 10 and a special train had left London on that date with 300 shareholders. Heavy rain had so undermined the approach to the bridge at Mountnessing as to make it unsafe, and although Chelmsford and Colchester had decked themselves with flags and bunting, the train returned to London "with grievous disappointment to all." On March 29, the directors and their friends arrived at Colchester and were entertained by the Mayor and Corporation.

Staff and Labour Matters

Railway Wages

Representatives of the Railway Executive Committee met representatives of the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association, in London on March 22 to discuss applications made by the trade unions for an increase of 10s. a week in the wages and salaries of railway staff. The trade unions explained the reasons which prompted their applications, and the representatives of the Railway Executive Committee undertook to consider the representations which had been made and to give a reply as soon as possible.

In December last year the Railway Staff National Tribunal issued its award (No. 9) on claims presented to it by the National Union of Railwaymen and the Associated Society of Locomotive Engineers & Firemen under which the war advance, excluding the increases granted under Decision No. 8, was increased to 16s. a week for male adults, 12s. for female adults, and 8s. and 6s. for boys and girls respectively. The increases were given retrospective effect to June, 1942. In addition to the 16s. war advance the minimum rated conciliation grades on the railways have received an addition of 4s. 6d. a week, under Railway Staff National Tribunal Decision No. 8, and, arising from this, consequential increases were granted to many of the higher rated staff.

The claims which were discussed on March 22 do not affect the railway workshop staff, nor the railway electrical staff, in respect of whom separate claims have been submitted.

Pickfords Clerical & Supervisory Staff

A comprehensive agreement dealing with rates of pay and conditions of service of clerical and supervisory staff employed by Pickfords Limited has been concluded recently between the company and the Railway Clerks' Association, the National Union of Railwaymen, and the Transport & General Workers' Union, and came into operation on March 1. The new rates of pay are given in the table below. Slightly higher rates are paid for shorthand typists and machine operators and the following London allowances are paid to male and female staff:—

			Salary yearly	3s. 6d. weekly	
				Adults	4s. weekly
Male Staff					
Juniors	...	...	Age 16	52	20
			" 17	62	20
Class 4	...	...	18	80	39
			" 31	220	39
Class 3	...	...	Minimum	230	39
			Maximum	260	39
Class 2	...	...	Minimum	275	39
			Maximum	305	39
Class 1	...	...	Minimum	320	39
			Maximum	350	39
Female Clerks					
Juniors	...	...	Age 16	19s. 6d.	weekly
			" 17	23s. 6d.	5s. 9d.
Adults	...	...	18	30s.	41s. 6d.
			" 31	67s. 6d.	79s.
Class 1	...	...	Minimum	72s. 6d.	11s. 6d.
			Maximum	77s. 6d.	11s. 6d.

Locomotive Development

Sir William A. Stanier, M.I.Mech.E., M.I.Loco.E., this year's President of the City & Guilds College Engineering Society, delivered his presidential address, which was entitled "Some Features Connected with Locomotive Development," at the college on March 25. He said that design of a new type of locomotive was initiated when the Traffic Department put forward a new requirement; sometimes the Chief Mechanical Engineer suggested that there was a good case for building a new type. The preliminary scheme was submitted to the Civil Engineer for approval of proposed axle loads, rigid wheelbase, and clearances. The side movement, or throw-over, on curves limited engine width to 8 ft. 8 in. over cylinders on the L.M.S.R. On the G.W.R., where an easily altered overhanging coping formed the edges of platforms, it was possible to accommodate slightly wider engines. In this country the overall length was limited by turntable facilities. Increases in axle loading were made possible by the use of 3- and 4-cylinder engines; these did not require such heavy masses in the wheels as 2-cylinder engines to balance reciprocating parts; consequently hammer-blow effects were not so severe. Tests made at high wheel speeds on a greasy track with class "5" locomotives with two cylinders showed severe track hammering with the conventional 66 per cent. balance of reciprocating parts. At 103 m.p.h. the wheels lifted 2.4 in. clear of the track at every revolution. The effect was less severe with a 50 per cent. balance and scarcely noticeable with 30 per cent. balance. Lightly-constructed engines of former times needed the larger balance weights to prevent fore and aft oscillations, but the inertia of heavy modern engines had a damping effect and permitted a greater degree of unbalance. An L.M.S.R. tank engine had run with no reciprocating balance for some time with no observable ill-effects on axle boxes or other parts.

Streamlining cost more per locomotive and had good publicity value but the savings effected were not great; there were few stretches where speeds of 80 m.p.h. or over were maintained and at lower speeds the reduction of horsepower due to streamlining was unappreciable except by careful measurement. The unclothed Pacific locomotive, aptly named by the drawing office "Lady Godiva," was satisfactorily performing similar duties to its streamlined equivalent.

In boiler design, an effort was made to keep the tube area as large as possible to give a free gas flow. Tube length was normally about 80 times tube diameter; there was not much advantage in having it longer. The front end of the boiler served as a feed-water heater; its weight was kept down by adopting a taper barrel. Superheat temperatures were so high that steam pipes in the smokebox lost heat to the flue gases which were at about 400° F.; consequently they might require to be lagged, notwithstanding obvious difficulties.

Locomotive efficiency approached more nearly to the ideal for the steam cycle employed than it had in former years. The efficiency ratio of an 1880 non-superheated engine was about 0.6; for a 1912 superheated engine about 0.62; for an L.M.S.R. "Coronation" engine 0.82; for a Chapelon engine 0.84, and for a modern electricity-generating station 0.79. A good big engine was always better than a good little one.

The tandem arrangement of valves on G.W.R. and L.M.S.R. locomotives kept thermal expansion effects within satisfactory limits. In the old Claughton arrangement expansion had been cumulative, so that valve events were seriously affected. The Caprotti-type valve improved these engines but long-travel piston valves actuated by gear of modern design gave equally good distribution. With double row ball bearings between return crank and eccentric rod, and needle roller bearings for all oscillating joints, the accuracy of valve motion was maintained for long periods.

Sideways stability in locomotives was secured by keeping as far apart as possible the supports given by the leading bogie and the trailing bissel. To make the bogie effective as a guide round curves the lateral control springs had to be sufficiently strong. An Indian class of engine was spreading the track because the control was weak and the leading coupled wheels were having to guide the engine, thus imposing very heavy sideways loads on the track. The strength of the control springs was increased from 2 tons maximum to 7 tons maximum and the trouble was overcome.

Good lubrication of bearings was essential, it was desirable to run on oil and not on metal. Water was difficult to exclude, particularly from the bearings of the carriage following the tender which was liable to be deluged from operation of the water pick-up. An old belief was that dirt caused hot boxes but the late G. J. Churchward effectively disposed of this idea by fitting up a brake van bearing with a funnel unit which he could feed with emery dust during a long run. The bearing was well lubricated and although it suffered from a lapping action it did not run hot.

The address was illustrated by slides and films and was received with appreciation by a large audience, consisting mainly of students of the college.

Questions in Parliament

East Africa Transport Workers

Mr. R. W. Sorensen (West Leyton—Lab.) on March 10, asked the Secretary of State for the Colonies whether he had considered the representations made by the running staff of European drivers of Kenya & Uganda Railways & Harbours; and whether steps were being taken to improve their salaries and conditions and reduce their hours of work.

Colonel Oliver Stanley (Secretary of State for the Colonies) in a written reply stated: I have received the petition mentioned by Mr. Sorensen. The points raised in it are under consideration by the High Commissioner for Transport in East Africa, and I am his awaiting recommendations.

Ministry of War Transport

Mr. R. De La Bere (Evesham—C.) on March 16 asked the Prime Minister whether he would consider, in view of the number of problems and difficulties presented by constituents to their members on matters dealt with by the Ministry of War Transport, giving additional representation to that Ministry in the House.

The Prime Minister (Mr. Winston Churchill): I cannot feel that the appointment of an additional Under Secretary to the Ministry of War Transport would be justified. I understand that the Parliamentary Secretary has been absent from the House for a short time through illness, but he is now fully restored. Every effort should be made to keep Ministerial offices at a mini-

mum, especially in time like these, when the ordinary checks are not fully operative.

Work Stoppage at Stratford

Colonel H. W. Hurton (Sudbury—C.) on March 25 asked the Minister of Labour whether he proposed to take any action in connection with the strike of engine drivers and firemen at Stratford, London & North Eastern Railway, on Sunday March 21, 1943; and whether he was making any arrangements to counteract dislocation of services in the event of their threat that further strikes would take place weekly.

Mr. Ernest Bevin (Minister of Labour & National Service) in a written answer stated: This was an unofficial stoppage of work due to the refusal of a section of workers to do Sunday work and I am considering whether it is a case for prosecution. As regards the second part of the question the Minister of War Transport informs me that arrangements have been made to use all available locomotives for the conveyance of essential traffic.

Railway Revenue

Sir Frank Sanderson (Ealing—C.) on March 25 asked the Parliamentary Secretary to the Ministry of War Transport (1) whether he could state the total amount of preference stock of the railway companies that had not received its full rate of interest during the financial year ended December 31, 1942; and the amount of shareholders' capital which had received no return on the investment; and (2) what was the total net revenue earned by the railway companies for the year ended December 31, 1942; the amount of profit which would fall to the Exchequer; and whether the amount would be used towards the cost of the development of electrification of the railways and development generally after the war.

Mr. Noel-Baker in a written answer stated: For the year 1942 the following stocks received less than the full rate of interest: £66,142,180 London & North Eastern Railway 4 per cent. second preference, on which a dividend at the rate of 2½ per cent. was paid, and £25,698,802 London Transport "C" stock on which interest at 3 per cent. was paid. No dividend was paid on £42,360,925 London & North Eastern Railway 5 per cent. preferred ordinary stock or on £35,923,810 deferred ordinary stock of the same company. A White Paper will shortly be issued showing the estimated pooled revenue receipts and expenses and the resultant net revenue of the controlled railway undertakings for the year 1942. The net revenue will accrue to the Exchequer and no question of its appropriation arises.

Accommodation at Junctions

Lt.-Colonel J. R. J. Macnamara (Chelmsford—C.) on March 23 asked the Secretary of State for War whether he was satisfied that the night accommodation at important railway junctions for men and women of the Forces moving about the country was adequate and satisfactory.

Sir James Grigg (Secretary of State for War) stated in a written answer: I am satisfied that in general the accommodation is as good as can be provided with the limited materials and labour available. If Lt.-Colonel Macnamara has any particular dormitory in mind which should be improved I will gladly have it investigated.

Beer on Long-Distance Trains

Mr. Hugh Molson (High Peak—C.) on March 24 asked the Parliamentary Secretary to the Ministry of Food whether he was aware of the shortage of bottled beer on long-distance trains; what steps were being taken to ensure adequate supplies; and

whether this shortage was in any way due to the diversion of barley suitable for brewing for mixing with flour.

Mr. W. Mabane (Parliamentary Secretary to the Ministry of Food) : I have no reason to believe that the availability of bottled beer in restaurant cars on long-distance trains differs from its availability generally. The reply to the last part of the question is "No, Sir."

Transport of Seed Potatoes

Mr. M. P. Price (Forest of Dean—Lab.) on March 24 asked the Parliamentary Secretary to the Ministry of War Transport whether he had taken steps to facilitate the transport of seed potatoes from Scotland to the South of England to secure a satisfactory supply and distribution in time for spring planting.

Mr. Noel-Baker stated in a written answer : Yes, Sir. It was estimated that about 440,000 tons of seed potatoes would be required for planting in England and Wales in 1943. Up to the end of February 338,884 tons had actually been despatched from Scotland to England by sea and by rail, and I do not expect any difficulty in completing the movement of the rest.

Edinburgh Transport Commissioner

Major Duncan McCallum (Argyllshire—C.) on March 24 asked the Parliamentary Secretary to the Ministry of War Transport why the Regional Transport Commissioner in Edinburgh did not follow the practice of Ministers and himself answer the letters addressed to him by Members of the House dealing with matters concerning his office.

Mr. Noel-Baker : The Regional Transport Commissioner assures me that it is his practice to reply personally to letters addressed to him by any Member of the House. Sometimes, however, he is unavoidably absent from his office, and it may then happen that in order to avoid delay, letters are signed for him by someone else.

Major McCallum said that this was the second occasion on which he had addressed this officer and a reply had been sent by an assistant. If the Parliamentary Secretary and the Minister of War Transport could find the time and the courtesy to reply to Members, surely this officer could do the same.

Mr. Noel-Baker said he was sure that Major McCallum would realise that the commissioner had no intention whatever of being discourteous to him, but his duties required that he must travel a great deal and could not always know when it would be possible for him to get back to the office, and, that being so, he did ask assistants to sign for him in matters which he regarded as perhaps rather urgent.

British Overseas Airways Corporation

Captain F. J. Bellenger (Bassetlaw—Lab.) on March 24 asked the Secretary of State for Air what were the individual emoluments fixed by him for the members of the British Overseas Airways Corporation ; and whether any such members were receiving additional remuneration under Section 1 (5) and (6) of the British Overseas Airways Act, 1939.

Sir Archibald Sinclair (Secretary of State for Air) : With the exception of the Chief Executive Member, the members of the Corporation have, from the beginning, given their services without remuneration. In accordance with Section 1 (6) of the British Overseas Airways Act, 1939, the remuneration paid to the Chief Executive Member is a matter for the Corporation to determine.

Captain Bellenger : Has the corporation in fact so determined, and, if so, what was the amount ?

Sir A. Sinclair : That is not what I am asked in the question. Perhaps Captain

Bellenger will put that down. I am asked for the individual emoluments fixed by me, and I have answered that question.

Mr. F. Montague (Islington West—Lab.) on March 24 asked the Secretary of State for Air whether he could now make any further statement about the relationship between the British Overseas Airways Corporation and the Royal Air Force Transport Command.

Sir Archibald Sinclair (Secretary of State for Air) : Yes, Sir. As I informed the House on March 11 when announcing the decision to form the Royal Air Force Transport Command, it is the intention that the British Overseas Airways Corporation shall continue as a civil organisation. Some of its services terminate in, or pass through, neutral countries, and much of its work meets the essential communication needs of overseas civil administrations. Clearly, however, the services and requirements of the corporation and those of the new command must be co-ordinated if our air transport organisation is to be efficient and the most economical use—and the most effective for the conduct of the war—is to be made of our available resources. In the discussions that ensued between the Air Ministry and the corporation, general agreement was reached on the relationship which should obtain between the corporation and the command, save for one point of principle. The corporation asked for an assurance that it would be responsible for all regular trunk services except those carrying exclusively R.A.F. loads. I was unable to give the corporation this assurance, and the corporation, to my regret, did not feel able to accept as adequate the form of understanding which I proposed as an alternative. In these circumstances, four of the five members, including the Chairman, felt obliged to offer their resignations. I have to-day appointed a new board. Sir Harold Howitt, who has been a member of the Air Council since 1939, has accepted my invitation to become Chairman of the corporation for the time being. I have also invited Mr. Simon Marks and Mr. John Marchbank to become members, and they have accepted. Mr. Gerard d'Erlanger, Commodore of the Air Transport Auxiliary, will continue to serve. These four members will, for the present, constitute the new board. It will be for the new board to appoint a Chief Executive and to arrange for the duties of that office to be discharged until the new appointment is made. Meanwhile, and at all times, the resources of my department will be freely available.

Banned Poster

Mr. James Maxton (Glasgow, Bridgeton—I.L.P.) on March 24 asked the Parliamentary Secretary to the Ministry of War Transport if he was aware that the London Passenger Transport Board had recently refused to display an advertisement for a meeting to be held under the auspices of the Independent Labour Party ; and if he would take steps to see that the advertising facilities of this statutory company were made available to all sections of the community without political prejudice.

Mr. Noel-Baker : I am informed by the board that it rejected this poster on the ground that, in addition to announcing a meeting, it advocated a definite course of political action, and that it is contrary to its rule to exhibit posters of a political and controversial nature. The board assures me that this rule is applied impartially to all political parties and other bodies.

Mr. Maxton : Is the Parliamentary Secretary aware that this was a meeting to be addressed by Mr. Campbell Stephen (Camlachie—I.L.P.), and that on the poster

there was nothing except the place, time, and subject ? Surely it is not right that the activities of a political party should be at the mercy of the L.P.T.B. ?

Mr. Noel-Baker : In the view of those who made this decision, the poster, in addition to announcing the meeting, contained two political slogans of a definitely controversial character.

Mr. G. Buchanan (Glasgow, Gorbals—Lab.) : In a democracy ought not an advertisement for a meeting to be freely allowed, and ought not the test to be, not one of political controversy, but whether the poster contains any seditious matter against the country ? If they are free from that, should not the passenger board post bills in the ordinary way ?

Mr. E. Granville (Eye—Ind.) : In view of the fact that the Prime Minister destroyed the electoral truce on Sunday, is there anything wrong in the London Passenger Transport Board being allowed to conform to that situation ?

Mr. Maxton : Is the Minister aware that a responsible official of the board who was interviewed on this subject gave it as the reason that the poster contained a semi-attack on the Government, and are we becoming so totalitarian now that even a semi-attack on the Government is something that cannot be tolerated ?

Mr. Noel-Baker : If that was said—and, of course, I accept Mr. Maxton's assertion—I should myself regard it as a very unhappy way of defending the policy which the board has followed, but I do not as at present advised feel at all disposed, and I do not think it would be right for me, to upset a practice which has been followed with success for so long a period of time.

Rev. R. W. Sorensen (West Leyton—Lab.) : Is the Minister aware that posters frequently appear in the London tubes bearing contentious matter ?

Mr. Buchanan gave notice that, because of the unsatisfactory nature of the reply, he intended to raise the matter on the adjournment.

LIQUIDATION OF BARCS-PAKRAC RAILWAY

The Barcs-Pakrac Railway Company, with headquarters at Budapest, which owns the 59-mile standard-gauge railway between Pakrac and Barcs (a frontier town in Hungary on the northern bank of the river Drava) is being wound up, as briefly recorded at page 534 of our issue of November 27 last. This liquidation is said to have been decided upon in negotiations last August between Croatia, Hungary, Germany, and Italy, concerning the affairs of the Danube-Sava-Adria Railway Company, as the Barcs-Pakrac Railway Company was owned mainly by the D.-S.-A. Railway. The 1.6 km. section of the line leading from the Jugoslav (at present Croatian) frontier into Barcs (in Hungary) was sold to the Royal Hungarian State Railways in 1941. The whole line was formerly worked by the Jugoslav State Railways, and, since the establishment of the Croatian puppet State, by the Croatian State Railways. According to the agreement reached at the negotiations on August 8, the section in Croat territory was sold to the Croatian State Railways on the basis of the purchase price the Jugoslav State Railways had agreed to pay in 1940 (of which a first instalment of Dinars 12,000,000 had actually been paid). The share capital of the Barcs-Pakrac Railway Company amounted to Pengo 1,740,000, all the 16,664 "A" shares were owned by the Danube-Sava-Adria Railway Company, and most of the 26,749 "B" shares are said to have been in German ownership.

Notes and News

Heenan & Froude Limited.—The interim dividend is 5 per cent. (same).

Metropolitan Assented Stock.—The trustees announce that interest for the year ended December 31, 1942, at the rate of 3½ per cent. (same) will be paid on April 9, 1943.

Manila Railway Co. (1906) Ltd.—No dividend is being paid on the 5 per cent. non-cumulative preference stock for the half-year to June 30, 1942.

Brown Bayley's Steel Works Limited.—Interim dividend of 5 per cent., tax free, in respect of the year ending July 31, 1943.

Sheffield & South Yorkshire Navigation Company.—A dividend of ½ per cent. for 1942 is to be paid on the 4½ per cent. preference stock. No distribution on this stock was made for 1940 or for 1941.

Cammell Laird & Co. Ltd.—Net profit for the year 1942 was £192,121 (£186,548), and the final dividend is 6 per cent., again making 10 per cent. for the year. A sum of £100,000 is appropriated to general reserve, and the carry forward is £105,983 (£102,611).

Central Wagon Co. Ltd.—Declaration is made of an interim dividend of 5 per cent., less tax, in respect of the year ending September 30, 1943, payable April 10. The increase from 3 per cent. to 5 per cent. is made to reduce disparity between interim and final payments.

Institute of Transport Luncheon.—The speaker at the luncheon of the Institute of Transport announced for April 6 will be Mr. H. G. Strauss, M.P., Parliamentary Secretary to the Ministry of Town & Country Planning. The luncheon will be held at the Connaught Rooms, London, W.C.2, at 12.45 for 1.15 p.m.

King's Lynn Docks & Railway Company.—Net revenue for the year 1942 amounted to £6,874 which, with the balance brought forward from the previous year of £14, makes a total of £6,888. Debenture interest, £6,705, has been paid, leaving a balance of £183 to be carried forward. For 1941 the net revenue was £5,363.

H.Q.I Gift to Merchant Navy Comforts.—By saving and selling used razors-blades, members of the staff of L.N.E.R. H.Q.I have realised a sum of £24 19s. 3d., which has been received as a donation, through Mr. C. H. Newton, Chief General Manager, L.N.E.R., to the Merchant Navy Comforts Service.

Brazil—United States Economic Agreements.—Two economic agreements between the United States and Brazil were signed in Rio de Janeiro on March 18. The first provides for a credit of \$14,000,000 (£3,500,000) by the Import-Export Bank for railway equipment. The second increases the credit of \$25,000,000 (£6,250,000) previously accorded for the installation of a Brazilian metallurgical industry to \$45,000,000 (£11,250,000).

Chicago Underground.—The construction of the new underground railway in Chicago has caused serious disturbance to the surfaces of some of the principal streets, but the well-known State Street and Dearborn Street have now been repaved after having had the surfaces torn up for many months. Subway tunnels under both State Street and Dearborn Street through the Loop District were driven by shields, and, except for minor

settlement, the tunnelling did not disturb the street surface or traffic. However, in January, 1941, on the completion of tunnelling, work was begun on the construction of stations in open cutting. Underground railway operation on the State Street line was formally inaugurated on Monday last, March 29. The subways form the subject of a brief article at page 357.

The Railway Club: Next Meeting.—A meeting of the Railway Club has been arranged for Saturday, May 8, to be held in the club premises, 57, Fetter Lane, E.C.4, at 2.30 p.m. On that occasion Canon Reginald B. Fellows will present a paper entitled "How the Great Northern got to Cambridge."

Unofficial Railway Strikes.—On the last three Sundays (March 14, 21, and 28) certain drivers and firemen of the L.N.E.R. at Stratford have held an unofficial strike. The dispute is stated to have arisen because of the company's refusal to re-employ a person who had been convicted by the Courts. The Minister of Labour, answering a question in the House of Commons, recently, said that the stoppage was unofficial, and that he was considering whether it was a case for prosecution.

The Thames Tunnel.—The ceremony of throwing open to the public what was described in the contemporary issue of *The Times* as "this great bore" took place on Saturday, March 25, 1843—exactly 100 years ago. The Thames Tunnel, upon which work was begun on February 16, 1825, was constructed by Sir Marc Isambard Brunel, the father of the first Chief Engineer of the G.W.R.; the latter was also engaged upon the work as a youth. After some years of service as a foot tunnel between Rotherhithe and Wapping, it was purchased by the East London Railway in 1866. Railway traffic through the tunnel was inaugurated on December 6, 1869. The East London Railway became the property of the Southern Railway as from January 1, 1925, but is leased to a joint committee, and the present passenger service is maintained by the London Passenger Transport Board.

U.S.A. Locomotives in Great Britain.—In the course of a broadcast on March 23, Mr. George Dow, Information Agent, L.N.E.R., said that the new American-built "austerity" locomotives had been rendering excellent service since they arrived in Great Britain. For convenience of operation and maintenance, all are at present at work on the G.W.R., but previously some had been hauling freight trains on the L.N.E.R. in Scotland, including the hilly Waverley route between Edinburgh and Carlisle. Pointing out that on various previous occasions American engines had been imported into this country, he said that his researches showed that there were in all 111 predecessors to those we are now receiving. Many of the particulars were recorded in an editorial note on page 1 of our January 1 issue. The first batch was 14 locomotives for service on the Lickey incline of the old Birmingham & Gloucester Railway which came from Philadelphia in 1840. In all, 88 arrived in this country in the 1899-1900 period, when British locomotive builders were overwhelmed with orders. Of these 80 were of 2-6-0 wheel arrangement; 40 went to the Midland Railway, and 20 each to the Great Central and Great Northern. There were 7 tank engines to railways in South Wales (5 to the Barry and 2 to the Port Talbot), and one narrow-gauge locomotive to the Lynton & Barnstaple Railway. After the last war, 9 American-built engines of the kind used

on narrow-gauge military lines in France arrived in this country; 3 went to light railways in Wales and Shropshire, and the remaining 6 to the Ashover Light Railway. Mr. Dow observed that the present batch of American-built locomotives was destined for a much shorter stay in this country than any of its predecessors, as it was earmarked for the lines of communication behind the "Second Front."

John Baker & Bessemer Limited.—Surplus for the year 1942, after providing for all charges including depreciation,

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices	
			Mar. 26, 1943	Rise/ Fall
G.W.R.				
Cons. Ord.	58	39	58	+
5½% Cons. Pref.	115½	105½	119	+
5½% Red. Pref. (1950)	109	103	108	—
5½% Rt. Charge	133½	123½	135½	—
5½% Cons. Guar.	130	121½	131	—
4½% Deb.	117	105	117	—
4½% Deb.	118	108	116½	—
4½% Deb.	125	113	123½	+
5½% Deb.	137	127	136	—
2½% Deb.	77	70	75	—
L.M.S.R.				
Ord.	28½	16½	29½	—
4½% Pref. (1923)	62½	50½	61½	—
4½% Pref.	76½	67½	78	—
5½% Red. Pref. (1955)	102½	94½	104½	—
4½% Guar.	104½	97½	104	—
4½% Deb.	108½	101½	107½	—
5½% Deb.	111	101½	110½	—
L.N.E.R.				
5% Pref. Ord.	9½	2½	8½	—
Def. Ord.	5	1½	3½	—
4½% First. Pref.	62	49½	60½	—
4½% Second Pref.	32½	16½	32	—
5½% Red. Pref. (1955)	95½	79	95½	—
4½% First Guar.	98	88	100	—
4½% Second Guar.	90	78	91	—
3½% Deb.	85	76	84½	—
4½% Deb.	106	100	107	—
5½% Red. Deb. (1947)	106	103	104½	—
4½% Sinking Fund Red. Deb.	106	102½	106½	—
SOUTHERN				
Pref. Ord.	77	61½	73	—
Def. Ord.	23½	14½	21½	—
5½% Pref.	114½	104	117	—
5½% Red. Pref. (1964)	110	105½	111½	—
5½% Guar. Pref.	131	121½	133½	—
5½% Red. Guar. Pref. (1957)	115½	109½	114½	—
4½% Deb.	116	104½	116	—
5½% Deb.	134	125	135	—
4½% Red. Deb. (1962-67)	110½	106	110½	—
4½% Red. Deb. (1970-80)	111	106½	110½	—
FORTH BRIDGE				
4½% Deb.	109½	108	108	—
4½% Guar.	105½	100	104½	—
L.P.T.B.				
4½% "A"	122½	111	122½	+
5½% "A"	131½	122	130½	+
3½% Guar. (1967-72)	95½	97½	100	—
5½% "B"	121	111½	120½	—
"C"	56½	38	55½	+
MERSEY				
Ord.	27½	20½	29½	+
3½% Perp. Pref.	61½	56½	61	—
4½% Perp. Deb.	102½	99½	104	—
3½% Perp. Deb.	80½	76	79	—
IRELAND				
BELFAST & C.D.				
Ord.	9	4	9	—
G. NORTHERN				
Ord.	29½	12½	17½	—
G. SOUTHERN				
Ord.	25	10	9	—
Pref.	29	12½	14½	+
Guar.	53	35½	28½	—
Deb.	7½	55½	56	—

½ ex-dividend

income tax, and E.P.T. was £25,500. In arriving at this figure, £56,915 has been allowed for income tax payable in June, 1944, and for E.P.T. Surplus added to balance of £20,512 brought forward, makes £46,012. A sum of £2,380 is to be written off war damage insurance, and the directors recommend a dividend of 10 per cent., less tax (same), on the ordinary shares, carrying forward £23,414.

United Steel Companies Limited.—This company announces an interim dividend of 2½ per cent., less tax, payable on March 30.

Aire & Calder Navigation.—The ordinary stock is to receive a dividend of 1½ per cent., less tax, for the year 1942. No dividend was paid for 1940 or 1941.

Spanish Railway Loan.—The official German news agency reports from Madrid that a Decree of the Ministry of Public Works is granting a credit of about 96 million pesetas for the purchase of railway material and the improvement of the Spanish railway system.

Literature of Transport Interest.—The Institute of Transport states that it is hoped that particulars of books and periodicals of transport interest, which individuals or firms may intend for salvage, will be communicated to the institute before they are sent for pulping. The library of the institute is short of many volumes of transport periodicals, particularly those dating before 1927; and any assistance in completing sets would be much appreciated. The address of the institute is 15 Savoy Street, London, W.C.2.

Railway Fuel Shortage in Uruguay.—The shortage of fuel in Uruguay caused the Central Uruguay Railway to announce on March 25 that, unless fresh supplies were received before the ensuing weekend, all agricultural traffic, except that destined for feeding the public, would be compelled to cease, and passenger traffic would be reduced considerably. The company stated that it was receiving only 40 per cent. of its normal fuel supplies, yet recently it had transported the largest quantity of live-stock in its history.

Midland Railway Co. of Western Australia Ltd.—The directors have decided to recommend a dividend of 4 per cent. on the unified ordinary stock in respect of the year to June 30, 1942, less income tax at 10s. in the £; £2,373 will be placed to reversionary certificates redemption account. There has been transferred to depreciation and renewals account £60,000, to taxation reserve account £12,000, and to exchange contingency account £10,000, and a balance of £43,968 is carried forward, compared with £43,980 brought in.

P.W.I. London Section Fixtures.—The provisional syllabus of meetings and visits arranged for 1943 by the London Section of the Permanent Way Institution is as follows: April 14, Albert Stanley Institute, Hammersmith, lantern lecture on "The Steel Rail, Past, Present, and Future," by Mr. Cecil J. Allen; May 22, visit to West Hampstead and Cricklewood, L.M.S.R.; "Experimental Flat-Bottom Rails under Test"; June 5, visit to Parsons Green Depot, L.P.T.B.; July 24, visit to the Post Office Tube Railway; August 28, visit to the Imperial Institute, South Kensington (Sir Harry Lindsay has promised to receive and conduct the party); September 15, London: lantern lecture on "Bridges," by Mr. H. W. Clark; October 6, London: paper on "Technical Journalism," by Mr. Charles E. Lee; November 20, London:

lantern lecture on "Departmental Collaboration during and after Aerial Bombardment," by Mr. J. Pelham Maitland; December 8 (or 11), paper on "Railway Civil Engineering Accounts," by Mr. F. Lawson.

Consolidated Signal Co. Ltd.—This company's principal asset consists of £391,112 stock of the Westinghouse Brake & Signal Co. Ltd. In the directors' report for the year to September 30, 1942, it is stated that the Westinghouse company has declared a dividend for the year at the rate of 10 per cent. and a cash bonus of 2½ per cent., both less tax. The directors of the Consolidated company recommend a dividend on the ordinary stock for the year to September 30, 1942, at the rate of 24 per cent., less tax, comparing with 17 per cent. for the previous year. The carry forward is £1,584.

A Salvage Guide for Railway Staff.—A very large amount of material is being recovered continually by the railways. In a pamphlet recently distributed to members of railway staffs responsible for salvage, ways are outlined in which even more may be collected, and the importance of saving every scrap of usable material again is emphasised. Among notes for general guidance are those concerning the recovery of lead clips from fog-signals, the use of buttons and badges from old uniforms, the collection of every kind of rubber scrap, and the gathering of all broken boxes and other pieces of wood.

Trent Motor Traction Co. Ltd.—This subsidiary of the L.M.S.R. and L.N.E.R. companies and of B.E.T. Omnibus Services Limited reports a revenue for 1942 of £750,060 (£692,077), expenses of £684,974 (£619,683), including depreciation £49,945 (£61,618), and taxation £158,000 (£116,000), leaving a balance of £65,086 (£72,394). Adding £25,595 brought forward gives a total available of £90,681 (£99,623). General reserve receives £10,000 (£20,000), and the final dividend is 6 per cent., making 10 per cent. for the year (same) and leaving £26,652 to be carried forward. A sum of £2,182 realised on the sale of certain assets has been placed direct to general reserve.

Dublin United Transport Co. Ltd.—At the recent annual meeting of this company, the Chairman (the Right Hon. James Macmahon) said that during 1942 the company carried 163 million passengers, collected £1,286,874 in fares, and spent £1,028,194, including provision for depreciation and fixed charges. Fuel oil alone, on which their existence depended, cost 100 per cent. more than it did at the beginning of the war, and taxation obliged them to anticipate a sum of £192,300 to meet that liability this year. An increased dividend of 6 per cent., less tax, on the ordinary stock was declared. Fares had not been increased since the emergency began.

Baldwins Limited.—Profit for the year 1942, being balance of manufacturing and trading account, dividends and interest from subsidiary companies and from investments, after providing for taxation and after deducting special expenditure at collieries, and a provision for deferred repairs, was £330,939. Deduct depreciation £140,000, and directors' fees £5,864, leaving £185,075; add balance brought forward £54,272, making £239,347. The directors recommend a dividend at the rate of 10 per cent. per annum, less tax, on the ordinary stock, leaving £63,430 to be carried forward. The company in the group which for some years past has been mainly em-

ployed in the production of light alloys will be absorbed by the parent company during 1943.

New Mexico-Cuba Air Mail.—A new air-mail service between Cuba and Mexico City was inaugurated on January 1, by the Compañia Mexicana de Aviación, a subsidiary of Pan-American Airways Inc. This service is in addition to that maintained between Cuba and Mexico by the Eastern Division of the Pan-American Airways.

Fines for Damaging Railway Compartment.—Two youths were fined £7 each at Ayr Sheriff Court on March 24 for having wilfully and maliciously broken a window, the glass in a photograph frame, and an electric bulb, and torn down and broken a luggage rack, and behaved in a disorderly manner in a railway compartment between Ayr and Annbank.

The Quartermain Ticket Collection.—We learn with pleasure that arrangements are in course of completion for the permanent preservation, in the York Railway Museum of the L.N.E.R., of the extensive collection of British railway tickets, comprising approximately 35,000 specimens, which was assembled by the late Mr. Gilbert Frank Quartermain, of Eastcote, who was killed in an accident on October 30, 1942. It is housed in 32 looseleaf albums. Perhaps the most interesting section of the collection is that comprising the Great Western Railway and the lines absorbed by it.

Memorial Service for Sir Edward Beatty.—A memorial service for the late Sir Edward Beatty was held on March 30 at St. Martin-in-the-Fields Church. Those present included:—

Sir Edward Peacock and the Rt. Hon. Reginald McKenna, Directors, Canadian Pacific Railway Company; Mr. William Baird (also representing Mr. D. C. Coleman, President, C.P.R.); Mr. F. W. Mottley, Acting European Manager, C.P.R.; Mr. F. J. Whiddett, Deputy Secretary & Registrar of Transfers, C.P.R.; Sir Thomas Royden, Chairman, London Midland & Scottish Railway Company; Sir William Wood, President, L.M.S.R.; Sir Harold Hartley, Vice-President, L.M.S.R.; Colonel H. E. Roberts, District Passenger-Manager, Euston, L.M.S.R.; Lord Ashfield, Chairman, London Passenger Transport Board; Mr. Patrick Ashley Cooper, a member of the London Passenger Transport Board (representing the Hudson's Bay Company); Mr. C. H. V. Winter (also representing Mr. P. A. Clews, European Manager, C.N.R.); Mr. A. H. Coneybeare, European Secretary & Treasurer, C.N.R.; Mr. J. P. McClelland, General Passenger Agent (Europe), C.N.R.; Mr. D. M. Johnson, European Colonisation Manager, C.N.R.; Mr. G. E. Cowie, General Freight Agent (Europe), C.N.R.; and many others.

Contracts and Tenders

The following orders have been placed recently by the Egyptian State Railways:—

Transportation Stores Depot (Middle East): Boiler tubes.

General Electric Co. Ltd.: Switches.

Midland Electric Manufacturing Co. Ltd.: Glass jars for gravity cells.

James Walker & Co., Ltd.: Joints.

H. J. Evans & Co., Ltd.: Ferro silicon.

William Jacks & Co., Ltd.: Ferro chrome.

Rivet, Bolt & Nut. Co. Ltd.: Bolts and nuts.

The Canadian Department of Munitions & Supply has announced that the Canadian Government has ordered 200 railway tank cars to be built by Canadian Car & Foundry Limited, to offset a shortage which has developed because of the war. When completed, the cars will be operated for the department on a non-profit basis by the Canadair General Transit Co. Ltd., in conjunction with its own fleet which serves the oil industry in Canada.

Railway Stock Market

There has been little improvement in the volume of business passing on the Stock Exchange, but the tendency in most sections became very firm in response to the war news from Tunisia. The disposition to await the Budget continued to have a restrictive influence on market activity. Although earlier fractional declines in various of the junior stocks were mostly regained, there was no important change in the general tendency in home railway securities. A number of the prior charge and preference stocks again attracted rather more attention in view of their excellent investment merits and the fact that the yields compare favourably with those ruling on securities of a similar status in other sections of the Stock Exchange. The firmer undertone in home railway securities reflected the surrounding market trend, but was due in part to the hope that the figures of the White Paper on railway receipts will draw wider attention by the public to the great contribution the railways are making to the war effort. There has been further vague talk in the market of possible revision of the rental agreement, but this seems unlikely in view of the statements made at the annual meetings of the railways. Dividend payments on the junior stocks are very modest

when considered in relation to the large expansion in net earnings under wartime conditions, and no payments are possible on L.N.E.R. preferred and deferred stocks. The rental agreement will, however, have to be considered in relation to the experience during the whole of the period in which it remains in operation. This may perhaps prove to be a good deal longer than is often assumed. The agreement is to run until at least one year after the termination of hostilities, which may mean until Japan as well as Germany has been defeated. Moreover, it is possible that it may continue in force until such time as there has been final agreement on the vital question of post-war organisation and control of transport. It seems possible, therefore, that dividends at around current rates may be forthcoming on the junior stocks for a lengthy period. If this assumption, current in some quarters, proved correct, the large yields on the junior stocks would have attractions from the long-term, as well as from the near-term point of view. The long-term angle, of course, will turn in the main on the post-war organisation of transport, but there is every reason to expect that under the latter the railways and their stockholders will receive equitable treatment. Their

claim to this, it is hoped, will be assisted by the sacrifices they are making under the existing agreement. There is no question of post-war developments being based on the annual rental, bearing in mind that the railways have emphasised their right to the standard revenues of the 1921 Act.

Great Western ordinary at 58 was unchanged on balance, and a further small improvement to 119 was shown in the 5 per cent. preference; the 4 per cent. debentures were again 117. As in the case of most junior stocks, L.M.S.R. ordinary showed a tendency to improve from an earlier small decline, but the current level of 29½ compares with 29½ a week ago. This railway's senior preference held its recent improvement to 78; the 1923 preference at 61½ was also unchanged on balance. Small gains were shown in L.N.E.R. preferred and deferred, but the second preference was lower on the week at 31½, as was the first preference at 60, despite the attractive yields. L.N.E.R. first and second guaranteed improved to 99½ and 91 respectively. Southern deferred was unchanged on balance at 22. Elsewhere, London Transport "C" further improved from 55½ to 56½. There was little change in the general tendency in Argentine and other foreign railway securities. In other sections of the railway market, Canadian Pacifics again tended to improve.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week Ending	Traffic for Week			No. of Weeks	Aggregate Traffics to date			Shares or Stock	Prices					
			Total this year	Inc. or Dec. compared with 1941/2			1942/3	1941/2	Increase or Decrease		Highest 1942	Lowest 1942	March 26, 1943	Yield % (See Note)		
South & Central America																
Antofagasta (Chili) & Bolivia	834	21.3.43	£ 27,630	+	6,820	12	£ 321,840	224,260	+	£ 97,580	Ord. Stk.	14	7½	12	Nil	
Argentine North Eastern	753	20.3.43	10,236	+	1,578	38	462,420	396,654	+	65,766	6 p.c. Deb.	19½	3	5½	Nil	
Bolivar	174	Feb., 1943	4,519	—	93	8	9,811	9,572	+	239	Bonds	20½	9	19½	Nil	
Brazil	...	...	...	...	...	...	...	...	...	...	Ord. Stk.	7½	4	6	Nil
Buenos Ayres & Pacific	2,807	20.3.43	120,300	+	24,000	38	3,709,740	3,242,820	+	466,920	Ord. Stk.	12½	7½	10	Nil	
Buenos Ayres Great Southern	5,080	20.3.43	180,900	+	28,680	38	6,103,860	5,518,020	+	585,840	Ord. Stk.	12½	7½	10½	Nil	
Buenos Ayres Western	1,930	20.3.43	55,020	—	2,940	38	2,042,040	1,936,560	—	105,480	Ord. Stk.	12½	6	10½	Nil	
Central Argentine	3,700	20.3.43	137,400	+	37,785	38	5,025,405	4,010,019	+	1,015,386	Ord. Stk.	9½	4½	7	Nil	
Do.	—	—	—	—	—	—	—	—	—	—	Dfd.	3½	2	4½	Nil	
Cent. Uruguay of M. Video	972	20.3.43	36,539	+	6,645	38	1,031,470	920,695	+	110,775	Ord. Stk.	8	6	6	Nil	
Costa Rica	262	Feb., 1943	17,896	—	3,118	35	114,452	180,476	—	66,024	Stk.	16½	11	13½	Nil	
Dorada	70	Jan., 1943	6,000	+	3,530	4	—	—	—	—	I Mt. Db.	90½	89	89½	6½	
Entre Rios	808	20.3.43	15,528	—	3,090	38	672,516	582,624	+	89,892	Ord. Stk.	33	4	6	Nil	
Great Western of Brazil	1,030	20.3.43	18,100	+	8,300	11	196,500	134,700	+	61,800	Ord. Sh.	9½	9½	36½	3	
International of Cl. Amer.	794	Jan., 1943	8655,799	—	55,506	4	8655,799	8661,305	—	55,506	—	—	—	—	—	
Intercceanic of Mexico	—	—	—	—	—	—	—	—	—	—	Ist Pref.	1½	5/3	2	Nil	
La Guaira & Caracas	222	Feb., 1943	8,645	+	2,685	8	18,080	12,390	+	5,690	5 p.c. Deb.	11½	5	8½	Nil	
Leopoldina	1,918	20.3.43	35,045	+	3,637	11	364,227	342,211	+	22,016	Ord. Stk.	6½	3½	5	Nil	
Mexican	483	21.3.43	ps. 349,200	—	ps. 1,900	ps. 1	ps. 3,694,000	ps. 3,854,600	—	ps. 160,600	Ord. Stk.	1	1	1	Nil	
Midland Uruguay	319	Jan., 1943	16,209	+	2,611	31	98,364	94,599	—	3,765	—	—	—	—	—	
Nitrate	382	15.3.43	4,306	—	856	9	27,604	24,928	—	2,676	Ord. Sh.	77/—	3½	79/6	Nil	
Paraguay Central	274	19.3.43	£ 470,000	+	£ 51,600	38	£ 147,089,000	£ 130,534,000	+	£ 16,555,000	Pr. L. Stk.	53	40	52½	11½	
Peruvian Corporation	1,059	Feb., 1943	83,408	—	14,355	32	666,842	582,024	—	84,818	Pr. L. Stk.	19½	5	16½	Nil	
Salvador	100	Jan., 1943	£ 177,000	+	£ 39,000	30	£ 609,000	£ 499,172	+	£ 109,828	—	—	—	—	—	
San Paulo	153½	14.3.43	32,717	—	2,676	11	371,345	383,343	—	11,998	Ord. Stk.	59	41	60	3½	
Taltal	160	Feb., 1943	2,495	—	1,725	33	36,911	35,115	—	1,796	Ord. Sh.	41/—	23/4	32/6	Nil	
United of Havana	1,346	20.3.43	69,938	—	11,173	38	1,833,444	976,671	+	856,773	Ord. Stk.	8½	2½	6	Nil	
Uruguay Northern	73	Jan., 1943	1,634	+	642	31	9,544	8,946	+	598	—	—	—	—	—	
Canada	17,039	21.3.43	1,030,400	+	114,600	11	10,971,000	10,132,800	+	838,200	Ord. Stk.	16½	9½	15½	Nil	
India	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Barsi Light	202	Jan., 1943	22,440	+	10,612	42	172,958	135,863	+	37,095	—	—	—	—	—	
Bengal & North Western	2,090	Nov., 1942	264,975	—	33,087	8	449,400	561,082	—	111,682	—	—	—	—	—	
Bengal-Nagpur	3,267	Feb., 1943	932,775	+	84,975	46	10,031,400	9,111,000	+	920,400	Ord. Stk.	102½	88	103½	3½	
Madras & Southern Mahratta	2,939	10.1.43	242,475	—	33,202	28	6,658,391	5,656,721	—	100,167	—	105½	87	108½	5½	
Rohilkund & Kumaon	571	Nov., 1942	555,750	—	5,072	8	115,950	99,909	—	16,041	—	—	—	—	—	
South Indian	2,402	10.1.43	166,555	—	778	39	4,928,736	4,148,309	+	780,427	—	103½	88½	102½	4½	
Various	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Egyptian Delta	607	20.1.43	14,821	+	2,325	43	373,655	272,885	+	100,770	Prf. Sh.	5½	1½	4	Nil	
Manila	—	—	—	—	—	—	—	—	—	—	B. Deb.	44	35	35	10	
Midland of W. Australia	277	Jan., 1943	35,039	+	16,136	28	225,367	141,440	+	83,927	Inc. Deb.	95	90	95½	6½	
Nigerian	1,900	26.12.42	91,754	—	35,534	38	2,570,963	2,112,188	—	458,775	—	—	—	—	—	
South Africa	13,291	13.2.43	828,296	+	11,224	46	36,019,758	34,972,298	+	1,047,460	—	—	—	—	—	
Victoria	4,774	Nov., 1942	1,407,419	+	227,886	—	—	—	—	—	—	—	—	—	—	

Note. Yields are based on the approximate current prices and are within a fraction of 1½.

† Receipts are calculated at £ 1s. 6d. to the rupee

Argentine traffics are given in sterling calculated at 16½ pesos to the £

§ ex dividend